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WAR MACHINE

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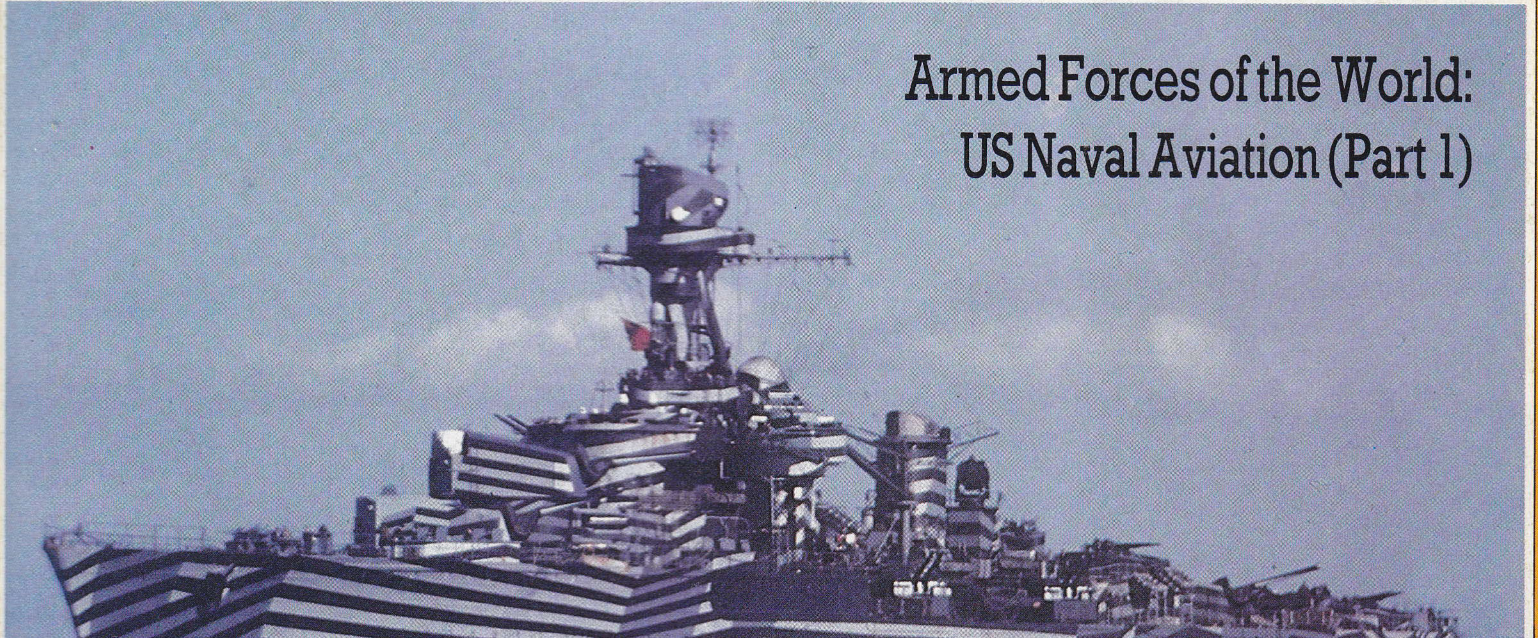

Armed Forces of the World:
US Naval Aviation (Part 1)

The Battle of Savo Island

Cruisers in the *Bismarck* Hunt

HMS *Exeter* in Action

A fully illustrated guide to Cruisers of World War II

WAR MACHINE

Volume 4 **Issue 41**

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Armed Forces of the World

US Naval Aviation (Part 1) iii

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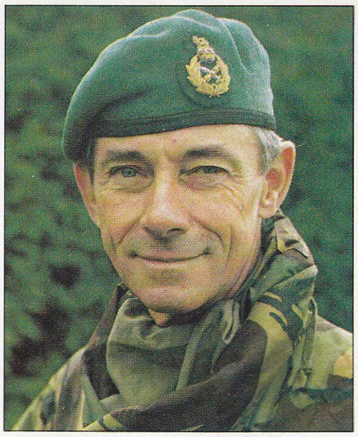

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WAR MACHINE

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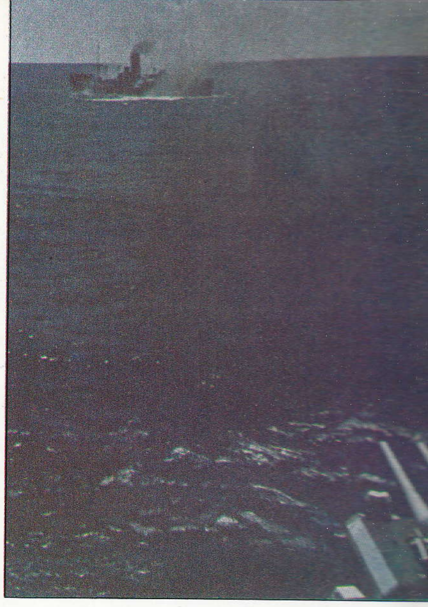
Cruisers of World War 11

With duties that varied from commerce protection to convoy raiding, and from offensive operations to fleet reconnaissance, the World War II cruiser inherited the mantle of the frigate of Nelson's day. Fast, well-armed vessels ranged the oceans in the service of all the major combatants, and proved extremely effective.



The winter of 1940-1 saw the German cruiser Admiral Hipper *make a successful foray into the sea lanes so vital to the survival of the UK. Ships sailing singly stood little chance of escape against the powerful raider, and all too often their fate was, as here, to be sunk by gunfire.*

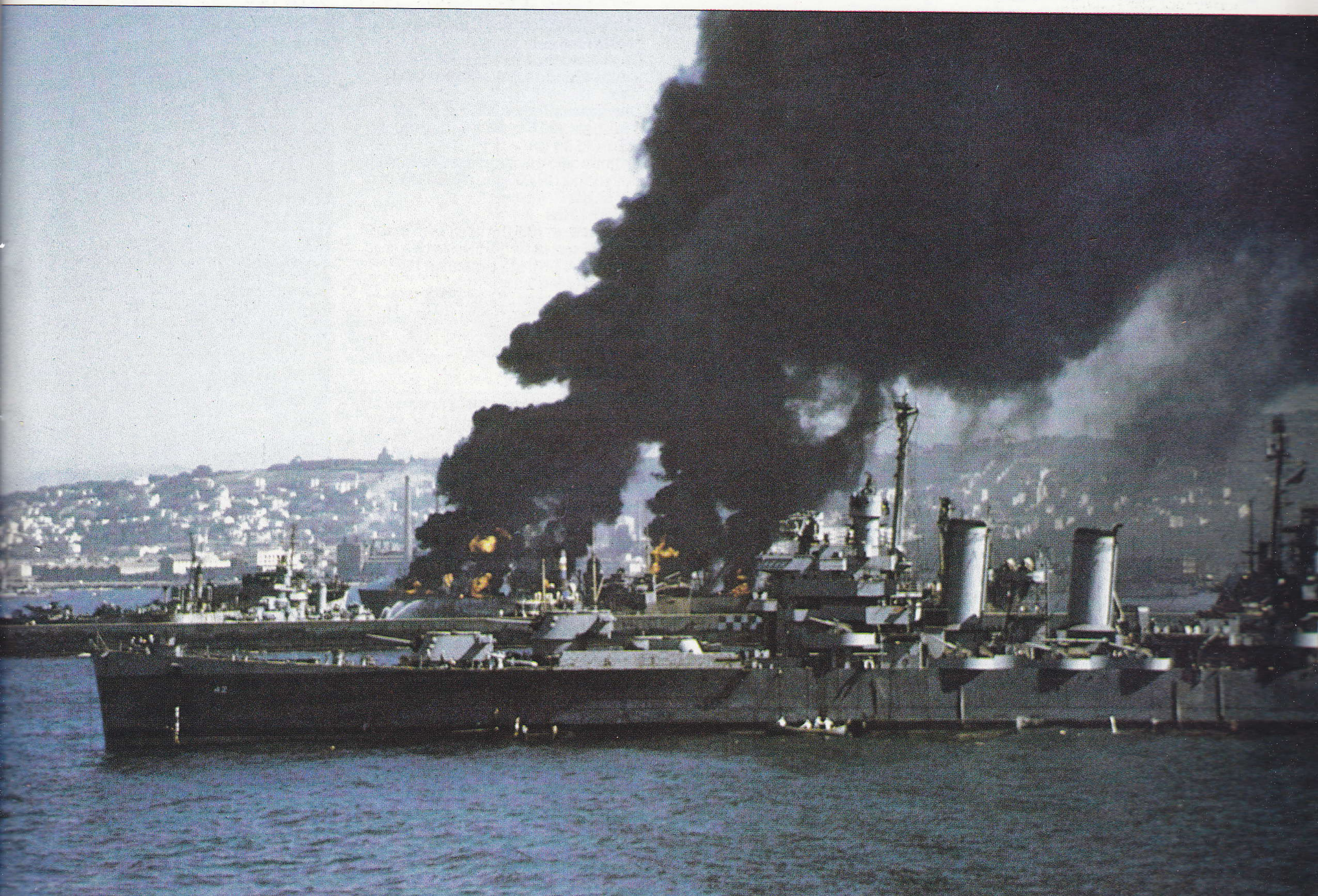
Though World War II could not be won for the Allies at sea, it could certainly have been lost there. There were many maritime arenas, and the cruiser proved its value in each.

British trade was as vulnerable as ever to attack and, as they had done a quarter-century earlier, the Germans used cruisers to harry commerce which the British deployed cruisers to protect. Both the German and Japanese fleets employed cruisers effectively in small-scale, surprise assaults, often to the extent of using them as transports. The Italians essayed the same tactics, but it suffered as the desperate measure that it was.

To the British, protection of their supply routes was all-important. The Atlantic convoys were largely the concern of smaller escorts, fighting an anti-submarine war, but the Mediterranean and to a lesser extent the Arctic routes were dominated by enemy air power, requiring close escort by cruisers with adequate modern AA armament and direction.

Cruisers were occasionally operated by the British in offensive squadrons playing vital roles in, for instance, the sinking of the *Admiral Graf Spee, Bismarck* and *Scharnhorst*. For large-scale 'fleet' use, however, one needs to look at the Pacific War where the Americans took on, and eventually prevailed over, an enemy on his chosen ground. The Japanese had probably the best cruisers of the era, superbly trained and handled, and used very imaginatively. The Americans profited by their early reverses to improve both ship design and tactics; besides having excellent matériel, they developed the will to win, the most important weapon of all.

February 1943, and in Algiers harbour burning 'Liberty' class ships provide a backdrop to the 'Brooklyn' class cruiser USS* Savannah *(CL 42). In the Mediterranean, air cruisers were much employed on convoy escort duties to combat air attacks, their heavier anti-aircraft weaponry being more effective than that of smaller escorting vessels against the many attacking Axis aircraft.

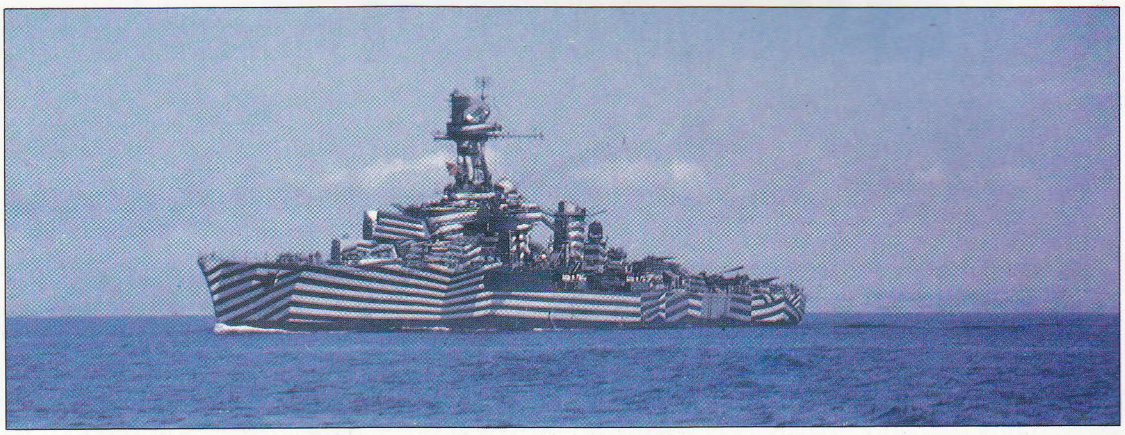


FRANCE

‘La Galissonnière’ class light cruiser

Contemporary with the penultimate pair of Italian ‘Condottieri’, the French **‘La Galissonnière’** class design had a distinct edge. By adopting a triple 152-mm (6-in) turret, the designers managed an excellent balance on the low standard displacement of 7,600 tons. Three mountings conferred a one-gun advantage over their rivals while economizing on overall weight, length of hull and area to be protected. Thus vertical protection of up to 120 mm (4.62 in) could be worked in, together with a 50-mm (1.97-in) protective deck. Where the Italians could dispose of 120,000 shp (89485 kW) the French had only 84,000 shp (62640 kW), yet their effective speeds in a seaway were little different at 33 to 34 kts. Interestingly, the French hulls incorporated wide transom sterns; these are today virtually universal in warship design, reducing resistance through the suppression of the stern wave.

Six ships of the type were built, but they fared badly with the changing fortunes of the French state. Following the 1940 capitulation, the loyalties of French Senegal were not known to the British, who mounted an operation against Dakar: the *Gloire*, together with the *Montcalm* and *Georges Leygues*, sailed from Toulon to assist. Suffering from machinery problems the *Gloire* went into Casablanca but the other two reached Dakar. This port, though effectively neutralized, passed to Allied control only when the Axis finally occupied Vichy France, the three cruisers coming over to the Allied cause. With the occupation, the remaining French fleet, still inactive at Toulon, was scuttled, including the three remaining ships of the class. Of these, two were salvaged by the Italians only to be sunk finally by Allied bombing in 1943. The *Gloire* was present at Anzio, and the *Montcalm* at Normandy.



An example of the most successful of pre-war French cruiser designs, the bizarrely camouflaged *Gloire* ***is shown after her 1943 refit in the USA, with much increased AA armament and equipped with radar. Two of her sister ships received similar treatment.***

Specification

‘La Galissonnière’ class

Ships in class (launched): *La Galissonnière* (1933), *Jean de Vienne* (1935), *Marseillaise* (1935), *Gloire* (1935), *Montcalm* (1935) and *Georges Leygues* (1936)

Displacement: 7,600 tons standard and 9,120 tons full load

Dimensions: length 179.0 m (586 ft 3 in); beam 17.5 m (57 ft 4 in); draught 5.3 m (17 ft 5 in)

Propulsion: Rateau-Bretagne or Parsons geared turbines delivering 84,000 shp (63640 kW) to two shafts

Speed: 35.7 kts

Armour: belt 75-120 mm (3-4.7 in); deck 50 mm (2 in); turrets 75-130 mm (3-5.1 in)

Armament: nine 152-mm (6-in), eight 90-mm (3.5-in) DP and eight 13.2-mm (0.52-in) AA guns, plus four 550-mm (21.7-in) torpedo tubes

Aircraft: two floatplanes

Complement: 540

ITALY

‘Zara’ class heavy cruiser

Latent Franco-Italian naval rivalry broke out anew after the Washington Treaty, the two French ‘Duquesne’ class cruisers being immediately trumped by the Italian ‘Trento’ class with superior protection. The latter were not even completed before the French embarked on the four ‘Suffren’ class cruisers, whose survivability was improved a little at the cost of some speed. As it then took Italy three years to reply, predictably, with the four **‘Zara’ class** cruisers, it would seem that the French design was acquired and thoroughly digested beforehand. In any case, the Italian units were excellent ships, with reduced power on only two shafts but with a high level of protection, whose weight took the ships beyond treaty limits.

Three of the class formed the 1st Cruiser Division at the Battle of Calabria, only a month after the outbreak of the Mediterranean war. The Italian action proved an anti-climax, the Italian fleet disengaging immediately the flagship had been hit.

The next significant action was also their last when, near the end of March 1941, a complex set of Italian fleet movements was undertaken with the object of intercepting a British convoy near Crete. The British, aware of what was afoot, cleared the area and set a trap for the Italians but the latter, as nervous and fleet as any antelope, smelled danger and made for home. Anxious to bring the Italian battleship to account, the British used carrier air strikes to slow it sufficiently to allow their heavy ships to close. Only the 1st Division's *Pola* was thus stopped, however, her two running mates *Zara* and *Fiume* with two destroyers then staying to assist. Admiral Cunningham's battleships fell on them and despatched them with close-range 381-mm (15-in) salvoes at what became known as the night Battle of Matapan. With the American ‘Astoria’ and British ‘Cressy’ classes the ‘Zara’ class thus has the melancholy record of losing three of its type in one engagement.

Specification

‘Zara’ class

Ships in class (launched): *Zara* (1930), *Fiume* (1930), *Gorizia* (1930) and *Pola* (1931)

Displacement: 11,500-11,900 tons standard and 14,200-14,600 tons full load

Dimensions: length 182.7 m (599 ft 5 in); beam 20.6 m (67 ft 7 in); draught 5.9 m (19 ft 4 in)

Propulsion: Parsons geared turbines delivering 108,000 shp (80535 kW) to two shafts

Speed: 32 kts

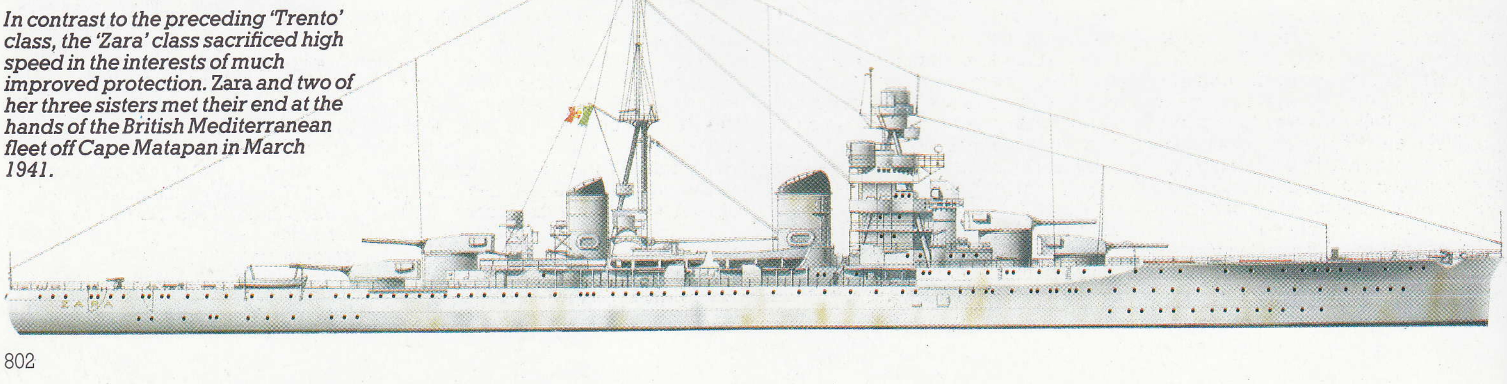
Armour: belt 100-150 mm (3.9-5.9 in); deck 70 mm (2.75 in); turrets 120-140 mm (4.7-5.5 in); barbettes 140-150 mm (5.5-5.9 in)

Armament: eight 203-mm (8-in), 16 100-mm (3.9-in) DP and eight 37-mm AA guns

Aircraft: two floatplanes

Complement: 830

Right: ‘Zara’ class cruisers on patrol in the Mediterranean. Built in the early 1930s in response to the new French vessels then entering service, the ‘Zara’ class were fine, well-balanced ships, somewhat larger than the size set down in the Washington Treaty.



In contrast to the preceding ‘Trento’ class, the ‘Zara’ class sacrificed high speed in the interests of much improved protection. Zara and two of her three sisters met their end at the hands of the British Mediterranean fleet off Cape Matapan in March 1941.

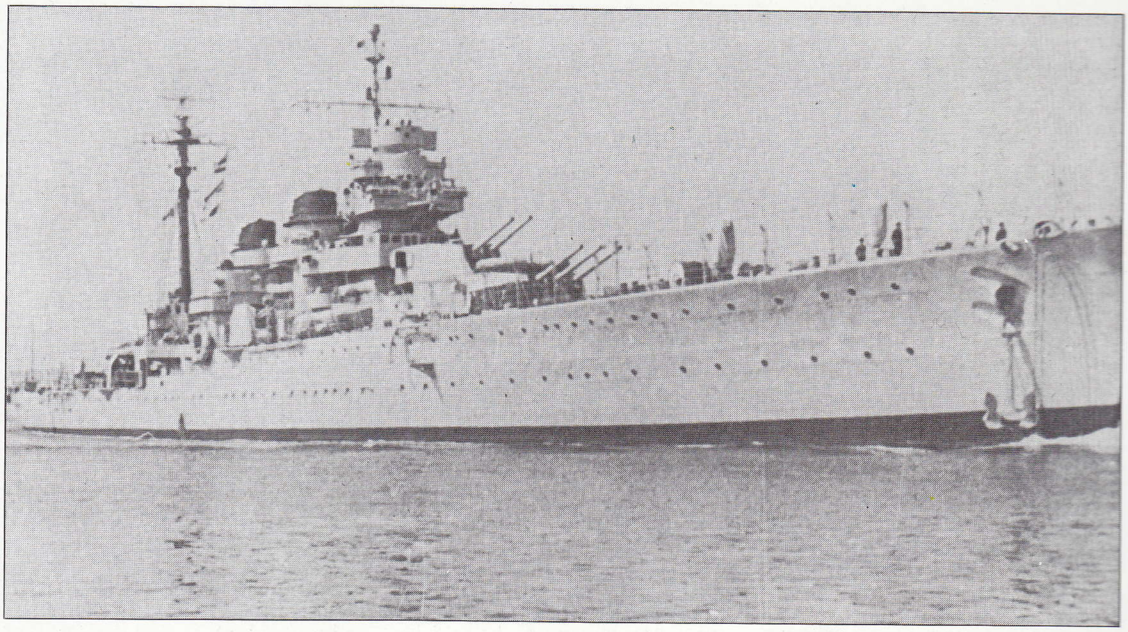
ITALY

'Condottieri' class cruiser

Though the Italians built many fine cruisers, lack of an offensive policy in war led to few of them being really tested in action. The 12 **'Condottieri' class** ships formed the backbone of their light cruiser strength, a quartet and four pairs constituting a logical development sequence over a five-year period. The *Garibaldi* and her sister were the ultimate pair and were very close to the 10,000-ton limit.

As a yardstick for the **'Giussano' class**, the four-strong first group of 'Condottieri', laid down in 1928, the French 'Duguay-Trouins' class was completed less than two years previously. Both classes carried four twin turrets and, though the Italian ships were rather faster, neither type was more than minimally protected. An immediate response in the French 'La Galissonniere' class was paralleled by the remaining 'Condottieri' over the same period. With the French ships incorporating a measure of protection, the Italians successively increased power and dimensions to maintain speed while improving survivability in the **'Bande Nere', 'Diaz', 'Montecuccoli'** and **'Aosta' classes.** The last pair comprised the **'Garibaldi' class** whose beam, draught and displacement were increased significantly to allow two extra guns (in triple A and Y turrets) and a further upgrading of protection. A fundamental shift in policy was the acceptance of a lower speed but this was acceptable as still representing a margin over the equivalent French ships.

The *Garibaldi*'s war was involved mainly in the distant cover for the various convoys to North Africa. In July 1941 she was torpedoed and heavily damaged by the submarine HMS *Upholder*.



Backbone of the Italian light cruiser force, the five groups of 'Condottieri' class cruisers were built over a five-year period in the 1920s and early 1930s.* Guiseppe Garibaldi *was one of the last two to be built, surviving wartime damage to serve the Italian navy into the 1970s.

Both sisters surived to be incorporated into the post-war fleet, the *Garibaldi* lasting until the 1970s converted to a prototype guided-missile cruiser with Terrier surface-to-air missiles.

Specification

'Condottieri' class (Group 5)

Ships in class (launched): Group 1 *Alberto di Giussano* (1930), *Giovanni delle Bande Nere* (1930), *Alberico da Barbiano* (1930) and *Bartolomeo Colleoni* (1930); Group 2 *Armando Diaz* (1930) and *Luigi Cadorna* (1930); Group 3 *Raimondo Montecuccoli* (1931) and *Muzio Attendolo* (1933); Group 4 *Emanuele Filiberto Duca d'Aosta* (1932) and *Eugenio di Savoia* (1933); and Group 5 *Luigi di Savoia Duca degli Abruzzi* (1933) and *Giuseppe Garibaldi* (1933)

Displacement: 9,195 tons standard and 11,260 tons full load

Dimensions: length 187.0 m (612 ft 5 in); beam 18.9 m (61 ft 11 in); draught 5.2 m (17 ft)

Machinery: Parsons geared turbines delivering 102,000 shp (76060 kW) to two shafts

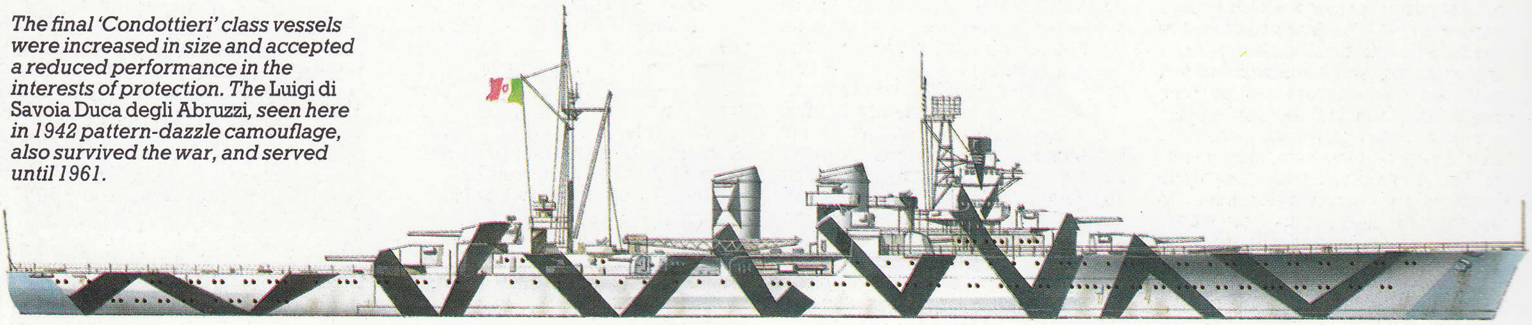
Speed: 33.5 kts

Armour: belts 130 mm (5.1 in); deck 40 mm (1.6 in); turrets 135 mm (5.3 in)

Armament: 10 152-mm (6-in), eight 100-mm (3.9-in) AA, eight 37-mm AA and 10 20-mm AA guns, plus six 533-mm (21-in) torpedo tubes

Aircraft: two floatplanes

Complement: 900



The final 'Condottieri' class vessels were increased in size and accepted a reduced performance in the interests of protection. The* Luigi di Savoia Duca degli Abruzzi, *seen here in 1942 pattern-dazzle camouflage, also survived the war, and served until 1961.

ITALY

'Capitani Romani' class light cruiser

The British concept of the small cruiser as used in World War I was followed by the Japanese in the 1920s but, thereafter, development lapsed for a decade until the French embarked on the 'Mogador' class. These looked like, and were, super destroyers but which, on a deep displacement of barely 4,000 tons, could outgun a 'Dido' class cruiser. With about 92,000 shp (68605 KW) they could also make 40 kts. The Italians, stung to urgency, produced the **'Capitani Romani' class**, laying down no less than 12 keels in the space of six months. As a result of Italy's varying fortunes of war, however, only four were completed.

Less than 5 m (16 ft 5 in) longer than the 'Mogador' class ships, the 'Capitani Romani' class vessels looked like small cruisers, their extra beam allowing space for machinery developing an astonishing maximum of 125,000 shp (93210 kW), equivalent to that of a 'Salem' class heavy cruiser of four times the displacement. At this power the Italian ships were good for 43 kts and, while they were virtually unprotected, they also shipped a very respectable main battery. In addition, eight torpedo tubes were fitted and mines could be carried, though probably in lieu of other topweight.

Their Roman names were splendidly euphoric, belying the headache that they could have caused any convoy escort commander not blessed with air support. As it was, four were demolished on the ways, five more being sunk through various agencies whilst fitting out. Three were completed in 1942-3, and one other was eventually salvaged and fitted out, the four being the *Attilio Regolo, Pompeo Maguo, Giulio Germanico* and *Scipione Africano*.

One pair served post-war with each of the French and Italian fleets. Of the Italians, the *San Giorgio* (ex-*Giulio Germanico*) served, albeit re-engined, until very recently. None of the four mounted its original armament, supply considerations dicating American 127-mm (5-in) L/38s in the Italian ships and ex-German 105-mm (4.1-in) weapons in the French units.

Specification

'Capitani Romani' class

Ships in class (launched): *Attilio Regolo* (1940), *Pompeo Magno* (1941), *Giulio Germanico* (1941) and *Scipione Africano* (1941)

Displacement: 3,750 tons standard and 5,400 tons full load

Dimensions: length 142.2 m (466 ft 6 in); beam 14.4 m (47 ft 3 in); draught 4.1 m (13 ft 5 in)

Propulsion: geared turbines delivering 110,000 shp (82025 kW) to two shafts

Speed: 40+ kts

Armour: not known

Armament: eight 135-mm (5.3-in), eight 37-mm AA and eight 20-mm AA guns, plus eight 533-mm (21-in) torpedo tubes

Aircraft: none

Complement: 425

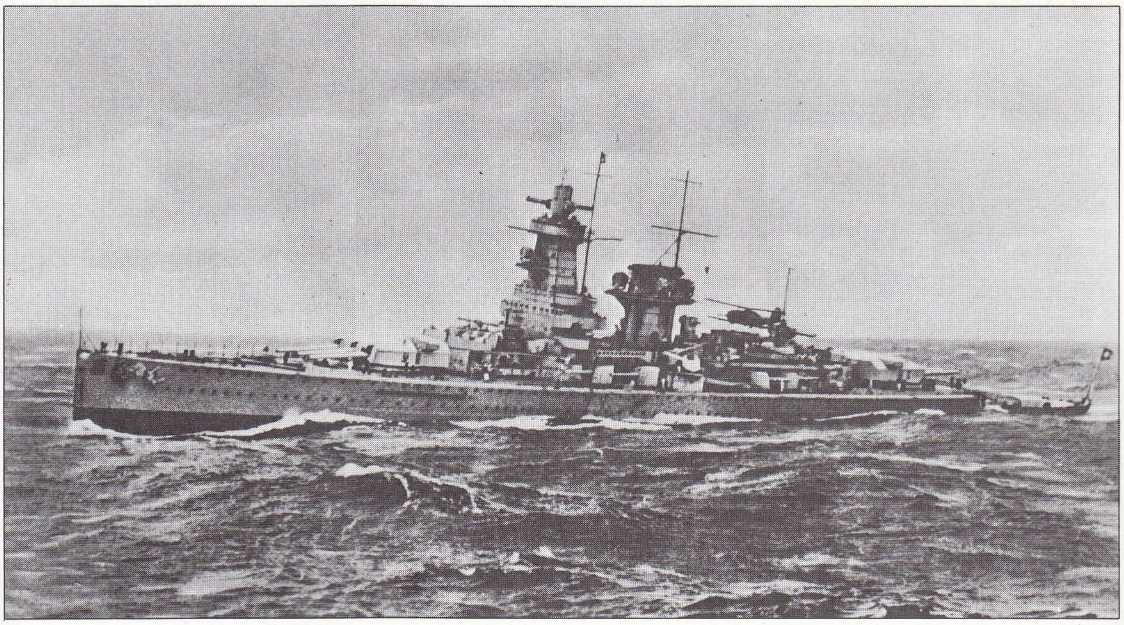
GERMANY

'Deutschland' class 'pocket battleship'

Until 1934 Germany was bound by the Treaty of Versailles, under whose terms no warship exceeding 10,000 tons could be built. To extract the maximum potency within this general limitation, the designers had to balance finely the conflicting requirements of speed, armament and protection. Long endurance was required to conduct an extensive *guerre de course* against France and the UK and the three **'Deutschland' class** ships were given the quite novel machinery of eight diesels driving two shafts, allowing for flexible and highly economical propulsion.

Electric welding saved 15 per cent on weight as compared with riveting, allowing for extra weight to be allocated to both armament and protection. Despite the overt weight-saving, however, the ships all exceeded their stated displacements. When constructed, they continued the concept of the armoured cruiser, being faster than any battleship and more powerful than any cruiser. Like armoured cruisers, they were vulnerable to battlecruisers.

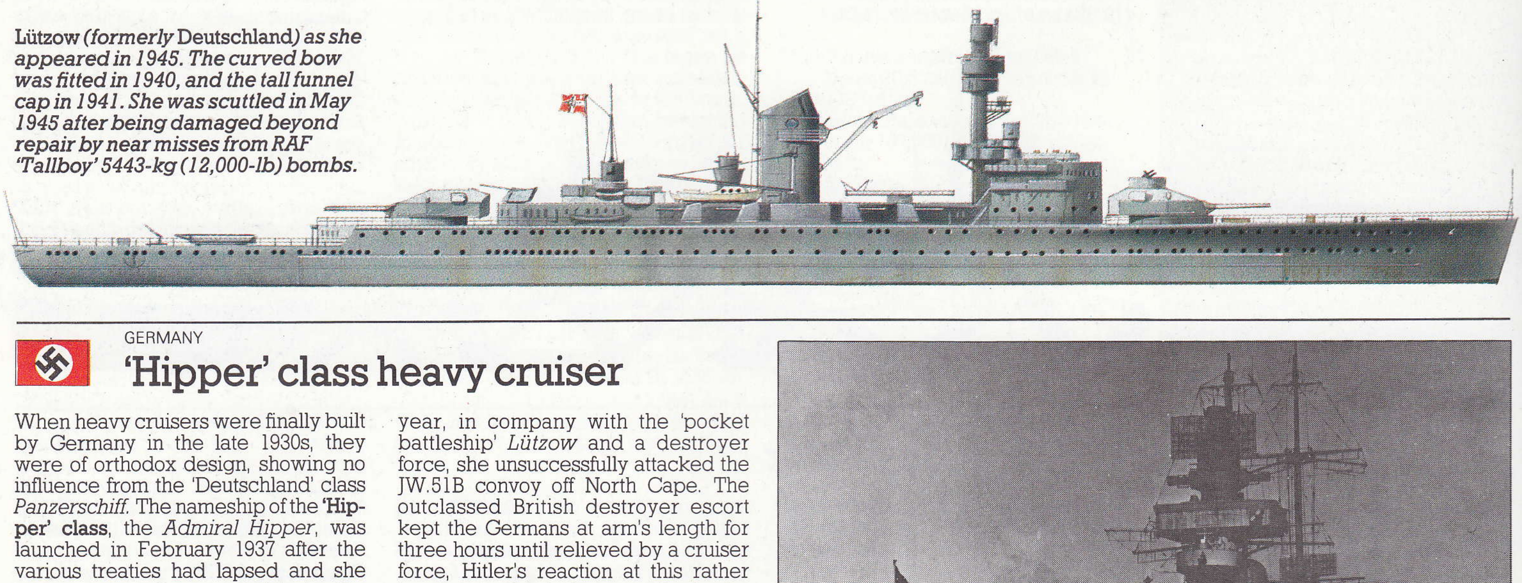
Until 1940, the ships were officially classified as *Panzerschiffe* (armoured ships), but were popularly known to the Allies as 'pocket battleships'. After the destruction of the *Admiral Graf Spee*, subsequent to the River Plate action, the surviving pair were recategorized as heavy cruisers. The *Admiral Scheer* had a brief but successful career as a raider, gaining particular notoriety with her sinking of the armed merchant cruiser *Jervis Bay*. The *Deutschland* herself was politically renamed *Lützow* after the *Admiral Graf Spee* affair and, until early 1942, spent much time in dock after being torpedoed on two separate occasions. Her major action was the tactical defeat off North Cape on 30/31 December 1942. Both ships were finally sunk by British bombing in the closing days of the European war.



Designed as very heavily armed commerce raiders, the German 'pocket battleships' utilized diesel propulsion and electric welded hulls (to save weight) in the quest for long endurance.* Graf Spee*, weathering a storm, displays the flat funnel cap and vertical bow of pre-war days.

Specification

'Deutschland' class (*Admiral Graf Spee*)
Ships in class (launched): *Deutschland* (1931), *Admiral Scheer* (1933) and *Admiral Graf Spee* (1934)
Displacement: 12,100 tons standard and 16,200 tons full load
Dimensions: length 186.0 m (610 ft 3 in); beam 21.3 m (69 ft 11 in); draught 5.8 m (19 ft)
Propulsion: eight MAN diesels delivering 56,000 shp (41760 kW) to two shafts
Speed: 28.5 kts
Armour: belt 80 mm (3.1 in); deck 45 mm (1.8 in); turrets 85-140 mm (3.3-5.5 in); barbettes 100 mm (3.9 in)
Armament: six 280-mm (11-in), eight 150-mm (5.9-in), six 105-mm (4.1-in) AA, eight 37-mm AA and 10 20-mm AA guns, plus eight 533-mm (21-in) torpedo tubes
Aircraft: two floatplanes
Complement: 1,150



Lützow *(formerly* Deutschland*) as she appeared in 1945. The curved bow was fitted in 1940, and the tall funnel cap in 1941. She was scuttled in May 1945 after being damaged beyond repair by near misses from RAF 'Tallboy' 5443-kg (12,000-lb) bombs.*

GERMANY

'Hipper' class heavy cruiser

When heavy cruisers were finally built by Germany in the late 1930s, they were of orthodox design, showing no influence from the 'Deutschland' class *Panzerschiff*. The nameship of the **'Hipper' class**, the *Admiral Hipper*, was launched in February 1937 after the various treaties had lapsed and she was, as a result, comparable in displacement with the big Japanese cruisers. By shipping only an eight-gun main battery, however, the Germans had more scope for improved protection. The *Admiral Hipper* was the best known of the class, being active in the Norwegian campaign of 1940, during which she was rammed and damaged by an intended victim, the British destroyer HMS *Glowworm*. In late 1940 and early 1941, she had a successful period as a raider before moving again to Norway, where her presence was partly responsible for the PQ.17 disaster in July 1942. On the last day of the year, in company with the 'pocket battleship' *Lützow* and a destroyer force, she unsuccessfully attacked the JW.51B convoy off North Cape. The outclassed British destroyer escort kept the Germans at arm's length for three hours until relieved by a cruiser force, Hitler's reaction at this rather inept operation being an order to decommission all heavy units. The *Hipper* thus survived to be taken in 1945. Also captured was the *Prinz Eugen*, best known for her being in company with the *Bismarck* in May 1941, and later accompanying the battle-

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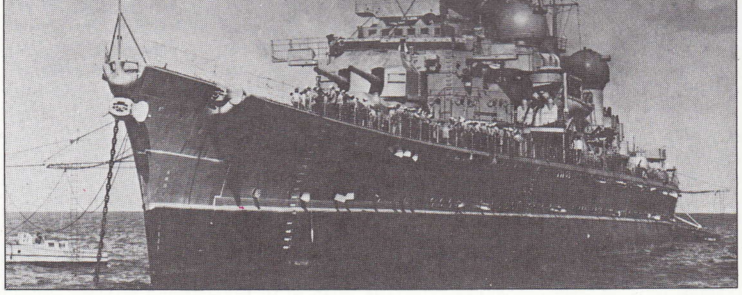
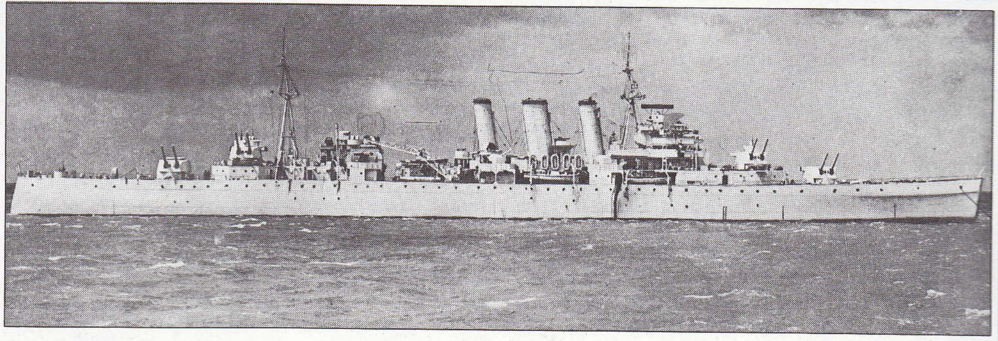


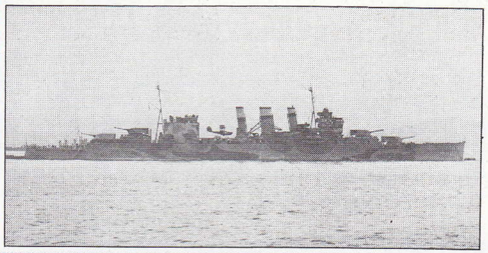
After* Prinz Eugen *was ceded to the US Navy in 1945, it was found that the high pressure steam machinery was a constant source of trouble. She was expended as an atom bomb target two weeks after this photograph was taken.

Cruisers in the *Bismarck* Hunt

In the early stages of the Atlantic war, the threat to British sea routes from German surface raiders was immense. Fortunately, German access to the North Atlantic was hampered by the narrow seas (now known as the Greenland-Iceland-UK gap) which the Royal Navy often successfully blocked. In May 1941, however, the German battleship Bismarck *and the heavy cruiser* Prinz Eugen *made a determined attempt to break through into the shipping lanes.*

Below: The 'County' class cruisers HMS Norfolk *(shown here) and HMS* Suffolk *were the first shadowers of the German force. In the most difficult of conditions, aided by radar, the two cruisers managed to maintain contact until* Bismarck *could be brought to action (unfortunately, as it transpired) by HMS* Hood *and HMS* Prince of Wales.





HMS Suffolk *and her radar were essential to the maintenance of contact with* Bismarck, *and in company with HMS* Norfolk *and the damaged HMS* Prince of Wales *she tailed the German vessel until the early morning of 25 May, when* Bismarck *eluded her pursuers.*

After Bismarck *was sighted by the Catalina flying-boat of RAF Coastal Command, HMS* Sheffield *was instructed to take up the shadowing. An air strike from HMS* Ark Royal, *in poor visibility, attacked in error the shadowing cruiser, fortunately to no effect.*

Despite the advent of radar and the aircraft, cruisers during World War II still had the classic functions of finding, tracking and reporting. In May 1941 the new German battleship *Bismarck*, in company with the heavy cruiser *Prinz Eugen*, left safe Baltic waters en route to the North Atlantic and a commerce-raiding cruise. Though already stretched, the British Admiralty had anticipated the move and directed cruisers north to watch the strategic gaps on each side of Iceland, through which the enemy was almost certain eventually to pass.

By virtue of ice-cover and defensive minefields, the 320-km (200-mile) wide Denmark Strait, between Iceland and Greenland, had been reduced effectively to a 48-km (30-mile) width at its northern end, and this gap was patrolled by the 203-mm (8-in) cruisers HMS *Norfolk* and HMS *Suffolk*.

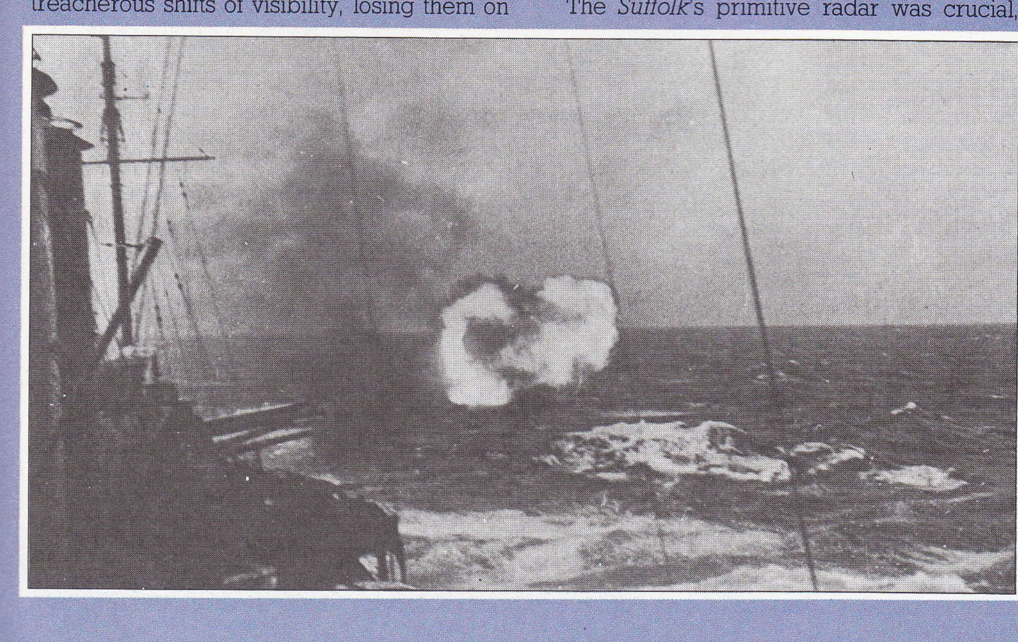
On 21 May the two enemy ships were sighted by aerial reconnaissance topping-up with fuel at Bergen, in occupied Norway. The Admiralty's reaction was to sail the battlecruiser HMS *Hood*, the new battleship HMS *Prince of Wales* and a destroyer escort from Scapa. Late the following day, the Germans were seen to have sailed and the remainder of the Home Fleet put to sea.

The *Norfolk* had an early radar whose fixed antenna covered only a sector ahead. The *Suffolk*'s type 284 gunnery set had a rotating antenna, but this was blanketed astern. It was, therefore, visually that she sighted the enemy in this sector on the evening of 23 May, steering south west along the ice-edge. The range was only about 12800 m (14,000 yards), so the *Suffolk* sent an immediate sighting report and slid into a friendly fog-bank. An hour later the *Norfolk*, too, made a sighting; at an even closer a range she was immediately taken under fire but was not hit.

For 10 hours through the short Arctic night the two cruisers hung onto the Germans in treacherous shifts of visibility, losing them on one occasion and having hastily to retreat on others. Their continuous sighting reports, however, allowed the *Hood* and her consort to make contact at 05.35 on 24 May. The resulting encounter was, however, disastrous, for the *Hood* erupted in a catastrophic magazine explosion at *Bismarck*'s third salvo and *Norfolk* became the senior British ship, pulling out the new *Prince of Wales*, which was already taking punishment, and resuming the tracking of the enemy pending the arrival of the Home Fleet.

The *Suffolk*'s primitive radar was crucial, holding the *Bismarck* through an evasive manoeuvre designed to cover the detachment of the *Prinz Eugen*. An air strike was vectored in from HMS *Victorious* late on 24 May but the only hit scored inflicted little damage and, just three hours later, the zigzagging *Suffolk* lost contact. It was over 30 hours later, on 26 May, that the battleship was sighted again by aerial reconnaissance barely a day's steaming from the safety of Brest, in occupied France.

Fortuitously, Force H from Gibraltar was well placed to take action and Fairey Swordfish torpedo bombers from HMS *Ark Royal* were readied for a torpedo strike. The cruiser *Sheffield* had, meanwhile, been ordered to make visual contact with the *Bismarck* but, in poor visibility, was attacked in error by the aircraft. She survived by fast reactions and was able to vector in a later force which decisively slowed the target. Harried all night by destroyers, the *Bismarck* was shot virtually to pieces the following day by HMS *Rodney* and HMS *King George V*. Even 356- and 406-mm (14- and 16-in) salvoes could not pierce the *Bismarck*'s vertical armour at close range, and the coup-de-grace was left to the cruiser HMS *Dorsetshire* with three torpedoes. Cruisers had opened the operation and, four days later, cruisers completed it, and without them the outcome would have been very different.

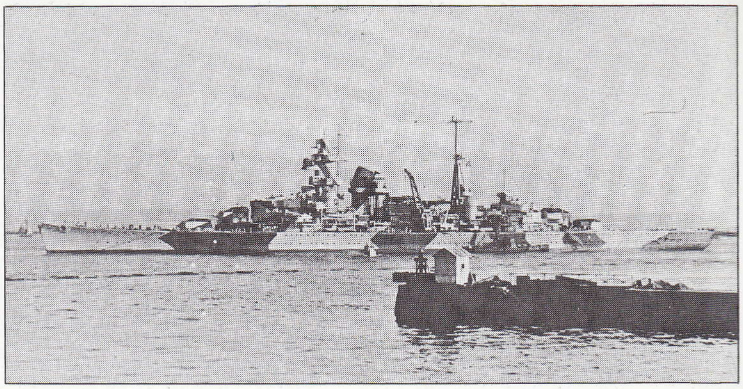


HMS Norfolk *replies to German fire in the Denmark Strait. Following the sinking of HMS* Hood, Norfolk *became senior ship and pulled the brand new HMS* Prince of Wales *out of the battle, to continue shadowing the enemy.*

cruisers *Scharnhorst* and *Gneisenau* in their celebrated dash up the English Channel. She was expended at the Pacific A-bomb trials after the war. The *Blücher*, a brand new ship, went down in April 1940 with a heavy loss of life when overwhelmed by Norwegian shore defences while heading up Oslofjord carrying an invasion force. *Lützow* (II) was sold to the Soviets in 1940 and the *Seydlitz* was never completed.

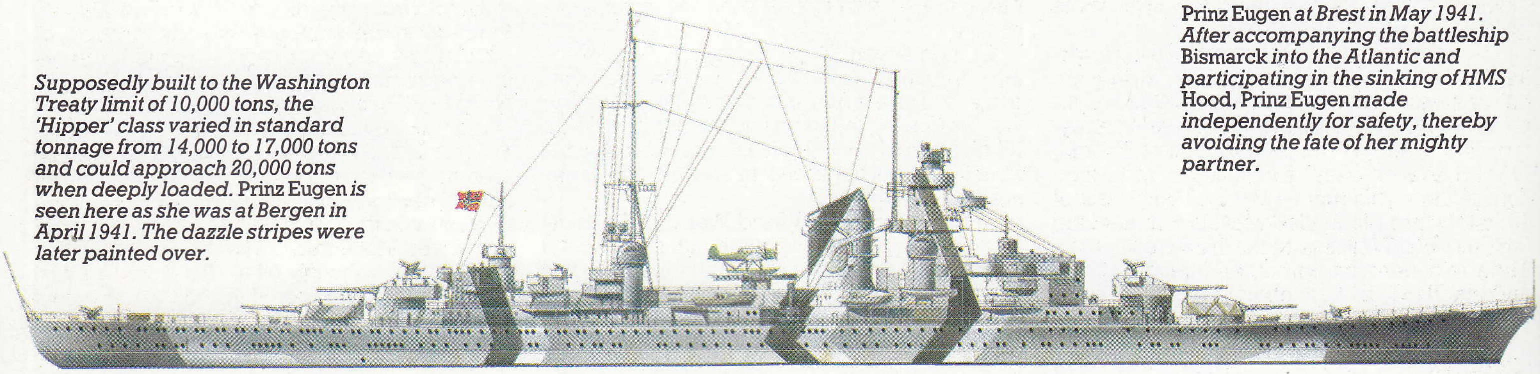
Specification

'Hipper' class (*Prinz Eugen*)
Ships in class (launched): *Admiral Hipper* (1937), *Blücher* (1937) and *Prinz Eugen* (1938)
Displacement: 14,475 tons standard and 18,400 tons full load
Dimensions: length 210.4 m (690 ft 4 in); beam 21.9 m (71 ft 10 in); draught 7.9 m (25 ft 10 in)
Propulsion: Brown Boveri geared turbines delivering 132,000 shp (98430 kW) to three shafts
Speed: 33.4 kts
Armour: belt 70-80 mm (2.75-3.1 in); deck 12-50 mm (0.5-2 in); turrets 70-105 mm (2.75-4.1 in)
Armament: eight 203-mm (8-in), 12 105-mm (4.1-in) DP, 12 37-mm AA and 24 20-mm AA guns, plus 12 533-mm (21-in) torpedo tubes
Aircraft: two floatpanes
Complement: 1,450



Prinz Eugen at Brest in May 1941. After accompanying the battleship Bismarck into the Atlantic and participating in the sinking of HMS Hood, Prinz Eugen made independently for safety, thereby avoiding the fate of her mighty partner.

Supposedly built to the Washington Treaty limit of 10,000 tons, the 'Hipper' class varied in standard tonnage from 14,000 to 17,000 tons and could approach 20,000 tons when deeply loaded. Prinz Eugen is seen here as she was at Bergen in April 1941. The dazzle stripes were later painted over.



UK

'County' class heavy cruiser

It was because of the new British 'Hawkins' class ships (nearly 10,000 tons displacement and armed with 190.5-mm (7.5-in guns) that the Washington Treaty limits on cruisers were set as they were. In keeping with the remainder of the signatories, who built up to these limits, the British produced the **'A'** or **'County' class.** Their designers eschewed, however, the current competitions for optimal armament or speed, producing instead a compromise well-suited to duties on imperial trade routes. Even so they were well-armed, had an adequate turn of speed, and were reasonably protected. They were notable for their considerable freeboard and three funnels, instantly recognizable anywhere. Excellent endurance and good standards of habitability made them both effective and popular. The London Treaty came into force before the construction programme was complete and some five planned units were cancelled.

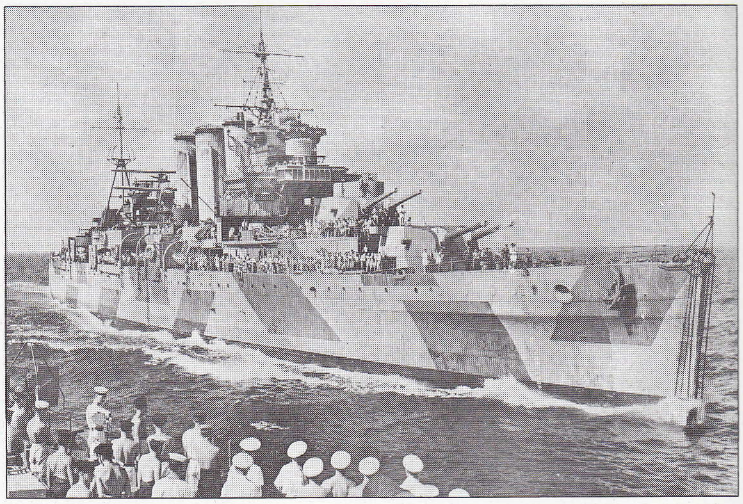
Though built in three separate groups as the **'Kent' class** (seven ships), **'London' class** (four ships) and **'Norfolk' class** (two ships), the 'County' class ships were originally very similar, but modernization during the 1930s produced variations. On four the after superstructure was greatly enlarged as an aircraft hangar, two of them being cut down a deck aft to compensate as the hull had a reputation for hard rolling. HMS *London* (only) emerged in 1941 from a rebuilding that left her looking like an enlarged 'Fiji' class cruiser with improved AA armament, the war preventing further such exercises.

In surface action, the ships proved generally effective but fell victim to air attack as readily as any other of their vintage. Their main contribution to the war at sea lay in the unspectacular but vital tasks of convoy protection and operations against raiders. Losses were HMAS *Canberra*, HMS *Dorsetshire* and HMS *Cornwall*.

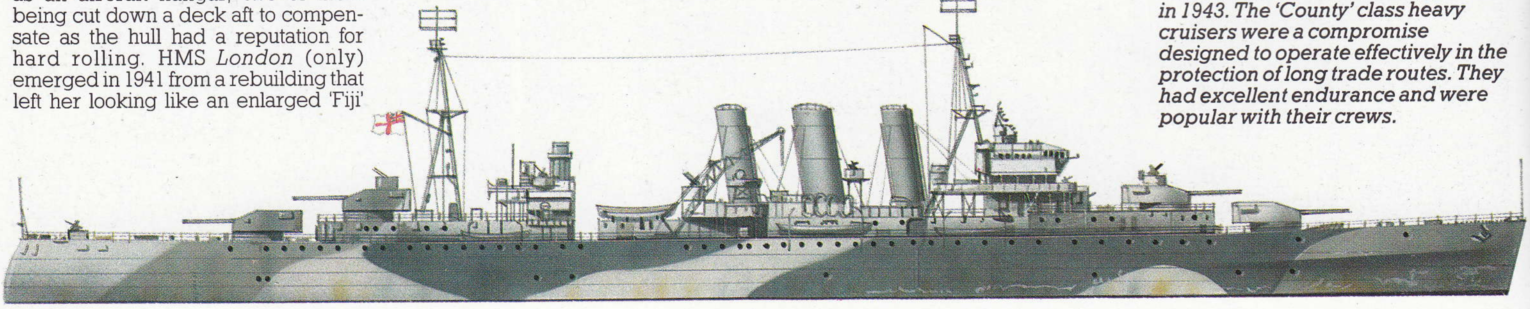
Specification

'County' class ('London' sub-class)
Ships in class (launched): *Berwick* (1926), *Cornwall* (1926), *Cumberland* (1926), *Kent* (1926), *Suffolk* (1926), *Australia* (1927), *Canberra* (1927), *Devonshire* (1927), *London* (1927), *Shropshire* (1928), *Sussex* (1928), *Dorsetshire* (1929) and *Norfolk* (1928)
Displacement: 9,8250 tons standard and 14,000 tons full load
Dimensions: length 193.3 m (633 ft) beam 20.2 m (66 ft); draught 6.6 m (21 ft 6 in)
Propulsion: Parsons or Brown Curtis geared turbines delivering 80,000 shp (59655 kW) to four shafts
Speed: 32 kts
Armour: belt 76-127 mm (3-5 in); deck 38-102 mm (1.5-4 in); turrets 38-51 mm (1.5-2 in); barbettes 25 mm (1 in)
Armament: eight 203-mm (8-in), eight 102-mm (4-in) AA and eight or 16 2-pdr AA guns, plus eight 533-mm (21-in) torpedo tubes
Aircraft: one or three flying-boats
Complement: 660

The 'County' class cruiser HMS Devonshire draws alongside HMS Mauritius in the Indian Ocean. The two ships are about to effect a transfer of either stores or personnel, with a line being passed from one ship to the other by means of a small rocket.



Below: HMS Norfolk as she appeared in 1943. The 'County' class heavy cruisers were a compromise designed to operate effectively in the protection of long trade routes. They had excellent endurance and were popular with their crews.



HMS *Exeter* in Action

HMS* Exeter *was designed in the 1920s as a cheaper alternative to the excellent (but expensive) 'County' class cruisers. In her relatively brief wartime career she saw both victory against the odds and final defeat, and in the process acquired a fighting reputation second to none.

Though designed to inhibit explosive competition in capital warship construction among the recently victorious powers, the terms of the Washington Treaty of 1921 had the reverse effect on cruisers. Its limits of a 10,000-ton displacement and a 203-mm (8-in) calibre armament rapidly became the frame into which naval designers packed the greatest possible potential.

The UK, however, did not want a few powerful ships so much as a large number with good endurance to police her trade routes and further her imperial interests. Only reluctantly, therefore, did she produce a class of 203-mm (8-in) heavy cruisers as an 'answer' to foreign competition. This was the 'A' or 'County' class of 13 stately three-funnelled vessels commencing with the four 'Londons' of the 1925-6 estimates. Their excellent armament, endurance, speed and standards of habitability were, however, bought at the expense of protection. They also had a unit price tag of £2 million, regarded as excessive in a period of general cutback in appropriations.

As a result a 'B' class diminutive was produced with displacement reduced from about 9,900 tons to less than 8,400. By adopting a six- rather than eight-gun main battery, length was reduced from 192 to 175 m (630 to 575 ft). This restriction on length also produced a reduction in bunker capacity from 3,200 to only 1,900 tons. The three funnels were reduced to only two by a trunking of the two forward uptakes into only one casing, characteristically thicker than the after one as a result. Protection was very light, with a 51-mm (2-in) horizontal deck to protect against long-range plunging fire and a 51/76-mm (2/3-in) vertical belt over the machinery spaces.

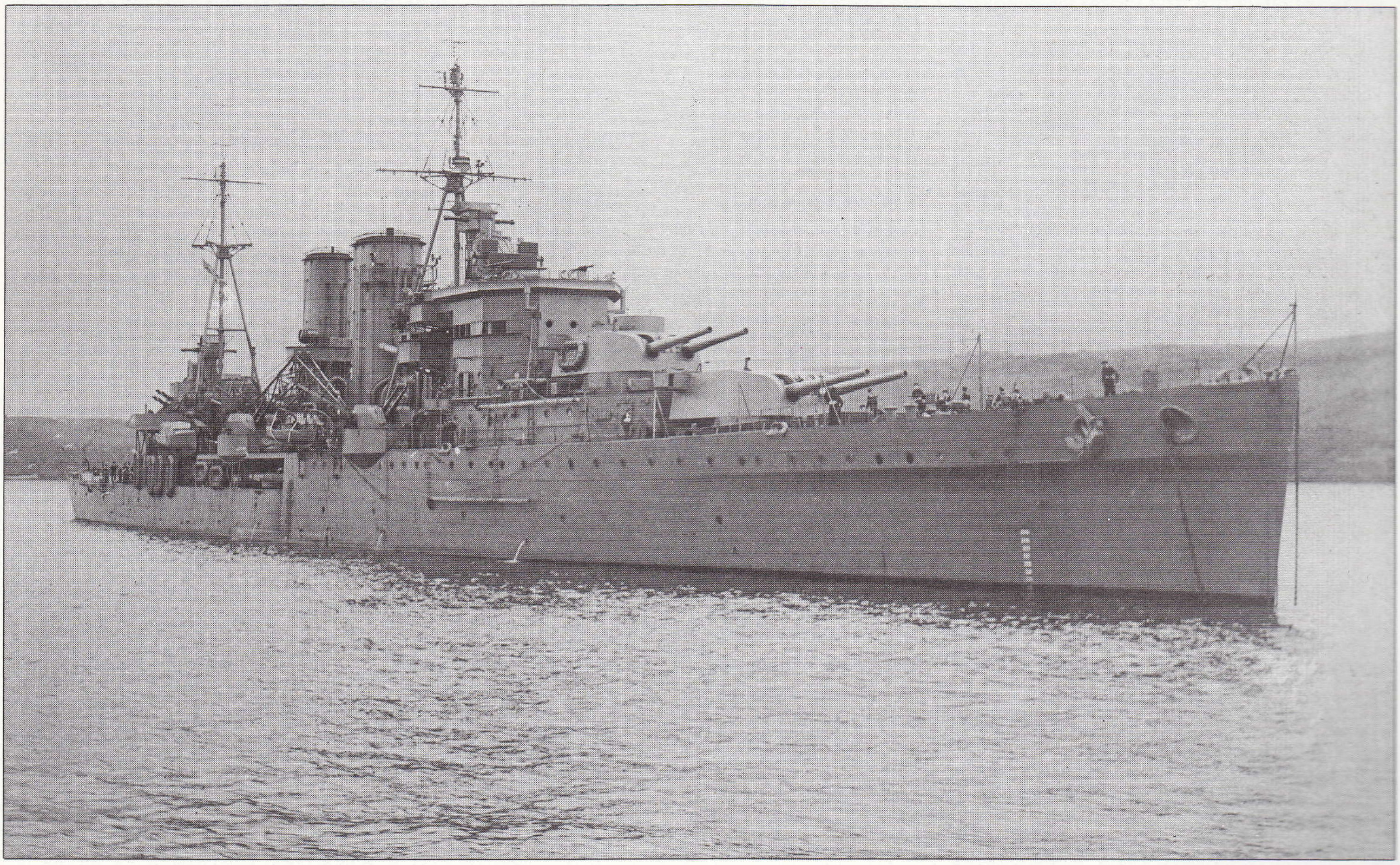
Though seven 'B' class cruisers were planned originally, only two were completed because of successive cutbacks. First of the class was HMS *York*, followed into service in 1931 by HMS *Exeter*, fourth of the name and constructed, appropriately, in Devonport dockyard.

At the outbreak of World War II in September 1939 the Exeter, together with the 'County' class HMS *Cumberland* and the 6-in 'Leander' class HMS *Ajax*, comprised the South American division of the forces of the Commander-in-Chief South Atlantic. This enormous tract of near-featureless water was significant mainly for being traversed by several extremely important trade routes.

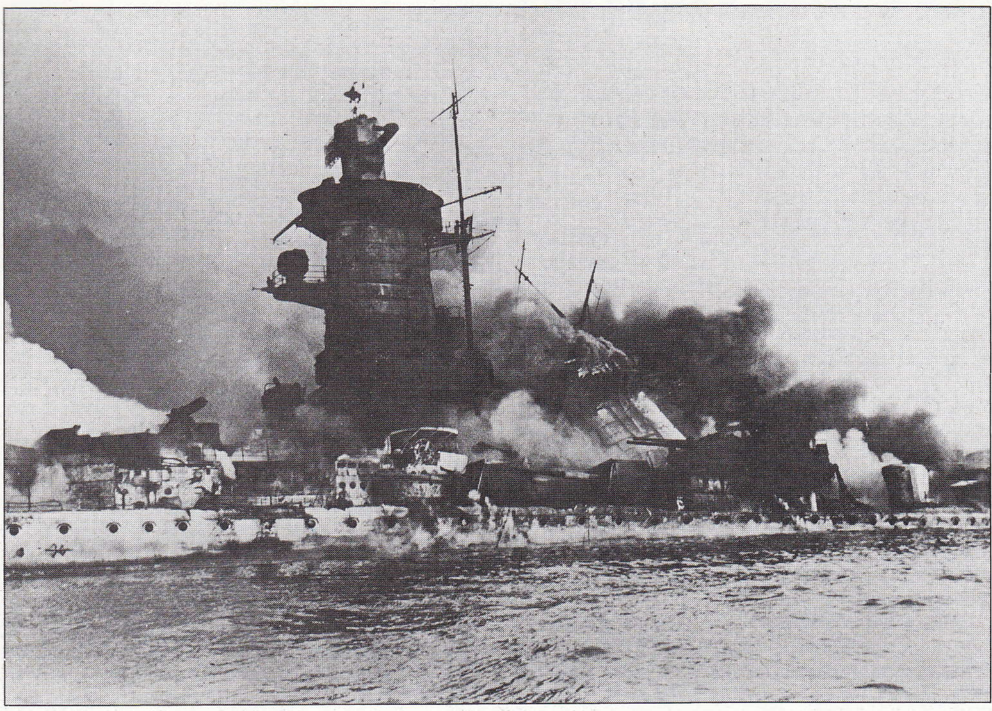
Germany well understood the vulnerability of the UK's maritime trade and had constructed ships designed expressly for the destruction of such trade. Among these was the trio of 10,000-ton *Panzerschiffe* (perhaps better known by their popular British label of 'pocket battleships'). These were well protected, featured multiple-diesel drive for great endurance, and had an armament including six 280-mm (11-in), eight 150-mm (5.9-in) and six 105-mm (4.1-in) guns. It was thought that what they could not outfight, the *Panzerschiffe* could outrun.

A fortnight before war commenced, two *Panzerschiffe* sailed unobtrusively into the Atlantic. One was the *Admiral Graf Spee*. Her orders, in the event of hostilities, were to disrupt trade but avoid action with warships that could cause her injury far from dockyard facilities.

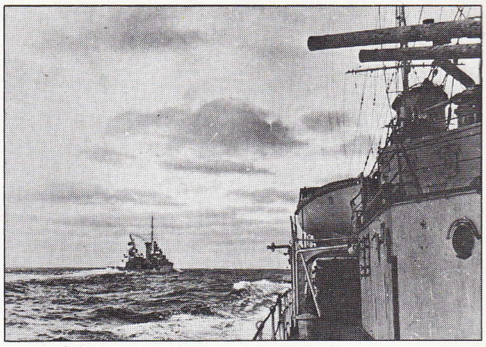
The enemy commenced operations near the end of September, sinking the Booth liner *Clement* off the Brazilian coast. To catch the *Admiral Graf Spee* the French and British put together eight separate hunting groups, of which Force G comprised the South American division reinforced by the Royal New Zealand Navy's HMNZS *Achilles*, a sister to the *Ajax*. Under the command of Commodore Henry Harwood, these four ships had an enormous area to cover but, despite the raider's widespread depredations, Harwood was convinced that she would eventually strike at the important River Plate' trade. His convictions were well-founded, though when his force sighted the *Admiral Graf Spee* off the Uruguayan coast on the morning of 13 December, his concentration was of only three ships, the *Cumberland* being near the Falklands.



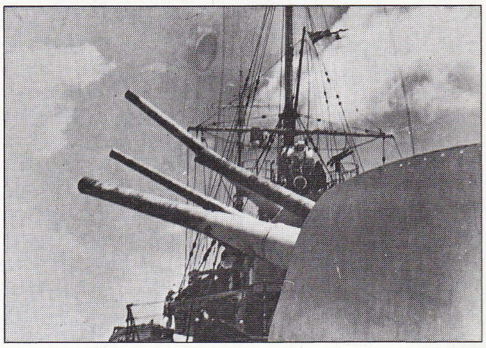
Designed as a cut-down 'County' class cruiser, HMS* Exeter *saw a great deal of action, ranging from her engagement with the pocket battleship* Graf Spee *through convoy protection and patrol duty to her final action in the East Indies.



Above: Although Graf Spee *had not been severely damaged, the action by HMS* Exeter, *HMS* Ajax *and HMS* Achilles *forced her into Montevideo. Convinced that a vastly superior British force was waiting, Captain Langsdorff scuttled the ship.*



Top right: HMS Ajax *and HMS* Achilles *head into Montevideo Roads with crews at action stations and guns trained and loaded. The news that* Graf Spee *had weighed was soon followed by news of her self-destruction.*



Above: HMS Achilles, *with guns at maximum elevation, tries to close the range with* Graf Spee. *The German 280-mm (11-in) guns were at that moment hammering at* Exeter, *eventually losing the use of all main armament.*

Harwood, like Nelson before him, had thoroughly discussed his plans with his captains and dispositions were smoothly carried out to split the enemy's fire. The *Exeter* took one side and the two light cruisers the other. Fire was opened at over 17375 m (19,000 yards) the *Admiral Graf Spee* first taking on the two light cruisers, whose volume of fire must, initially, have appeared more of a threat. She very soon switched, however, as the larger splashes of the *Exeter*'s 203-mm (8-in) weapons began to straddle.

Turning nearly 180° from her original course of near south east, the *Admiral Graf Spee* put the *Exeter* slightly abaft her port beam, with all six 280-mm (11-in) guns bearing. Simultaneously, she engaged the two smaller ships with her 150-mm (5.9-in) secondary armament.

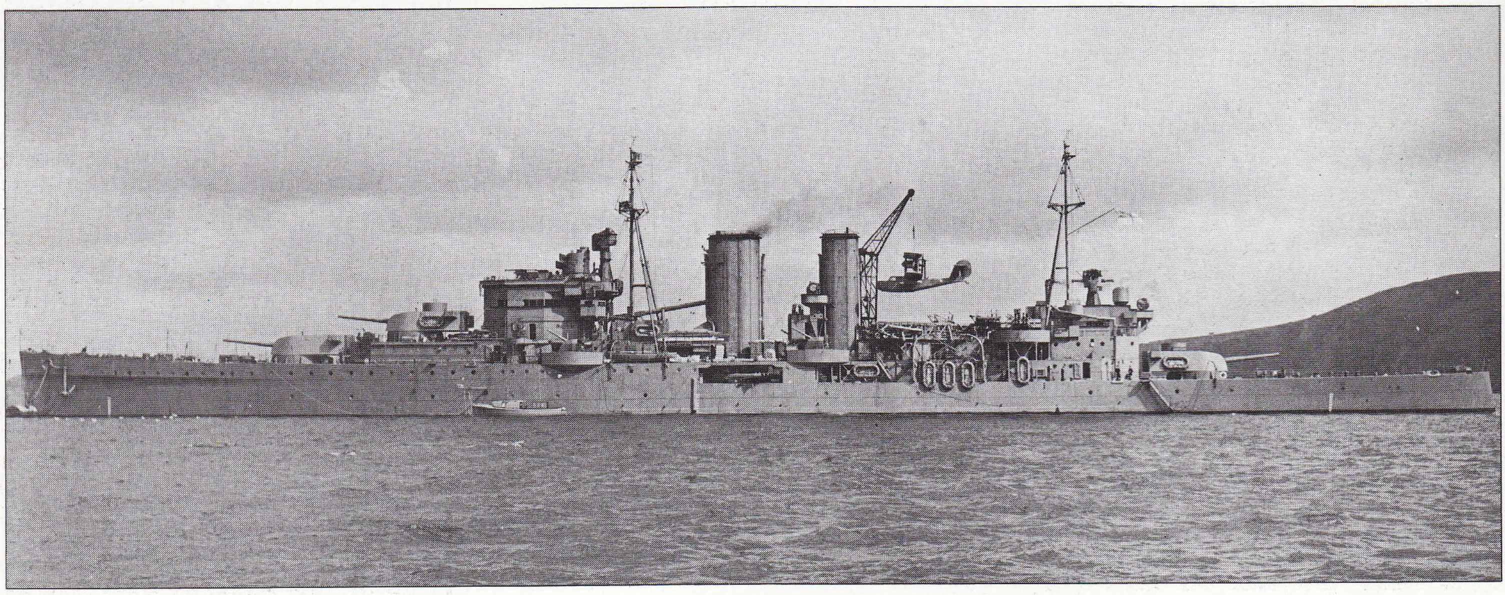
The enemy had the advantage of a radar set which could pass ranges to the gunlayers and the *Exeter* was soon hard hit by three 280-mm (11-in) projectiles, losing a turret and her steering. Under emergency control, she continued doggedly, launching her starboard torpedoes without effect. Hit again, she developed a starboard list and turned in that direction to fire her portside torpedoes, which were again evaded. Her injuries began to tell on both the accuracy and rate of her fire.

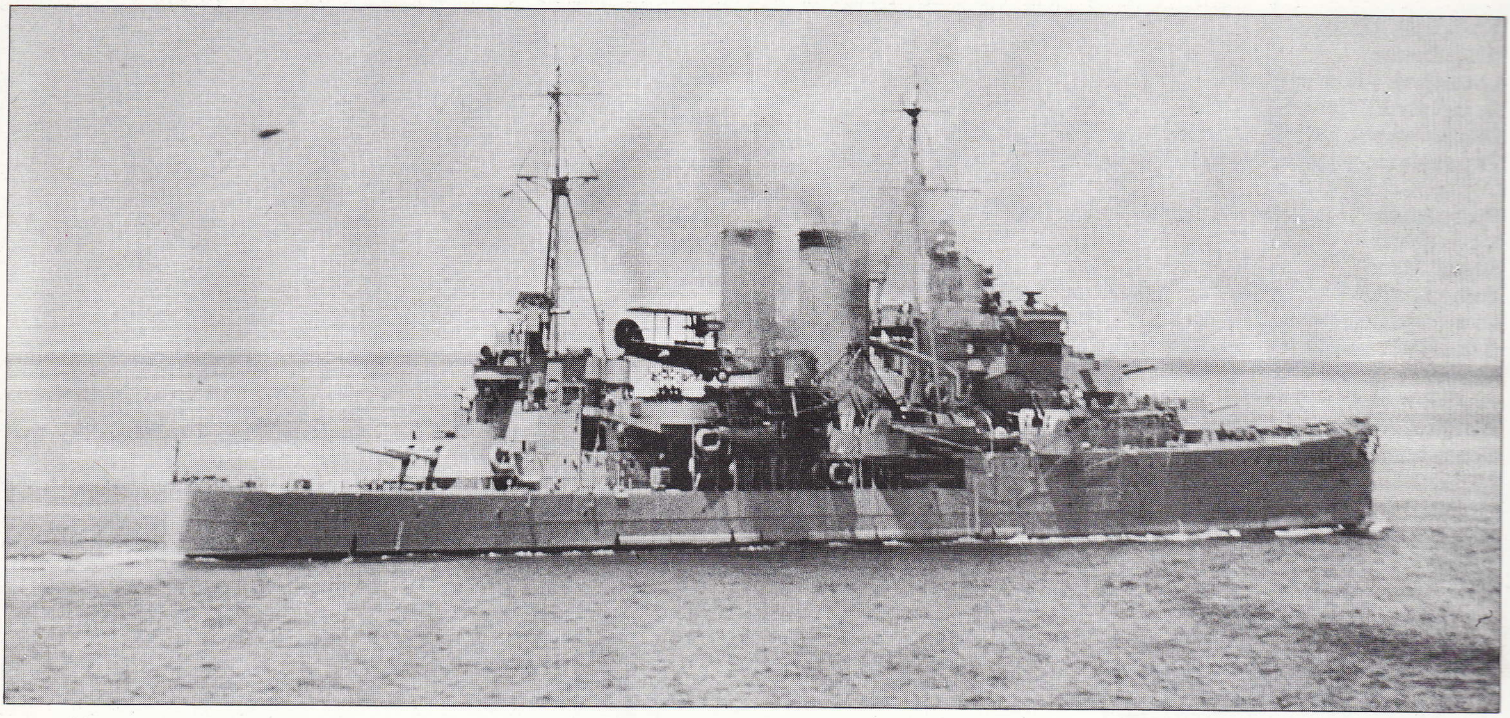
Still shooting well at a comfortable range, the *Admiral Graf Spee* hit her twice again, putting another turret out of action and starting a serious fire. Blinded and burning, the gallant *Exeter* was spent; pulling away, she disengaged to the south.

Comparatively untroubled to this point, the two light cruisers had to manoeuvre to deter the German from making after the *Exeter*. The enemy's resolve seemed broken, however, and from an hour after the action commenced, her course was generally westward, the *Ajax* and *Achilles* hanging on to her, eventually shepherding her into Montevideo.

Though the *Graf Spee* had lost 36 killed (in

Repaired and refitted, HMS Exeter *hoists a Walrus aircraft aboard. The refit meant an enlarged bridge, shorter masts and an increased secondary and AA armament.*





HMS Exeter *in action in the Bangka Strait off Sumatra. She is defending an Allied convoy from Japanese air attack just before the fall of Singapore, firing with her 102-mm (4-in) twin mounts.*

comparison, the *Exeter* alone suffered 61 dead) the damage from the 27 hits that she had suffered was superficial. Nevertheless, without hope of making it back to Germany, this still-formidable fighting machine was scuttled by her crew. This, and the suicide of her respected commander, Langsdorff, brought a sombre note to what had been to the British a sparkling little action.

Patched up at Port Stanley, the *Exeter* returned to the UK for a considerable period in dockyard hands before proceeding to the Far East to meet a worsening situation. Pearl Harbor tends to overshadow the quite brilliant campaign through which the Japanese took the Dutch East Indies in the following months. Using all available air and sea power, they conducted a bewildering series of feints and landings to keep the Allies permanently unbalanced.

A scratch collection of Australian, British, Dutch and American warships made up the so-called ABDA force which, by the end of February 1942, was damaged, worn out and demoralized. With Singapore gone, Java was the last major bastion left before Australia itself was threatened, and two enemy forces were reported approaching on 27 February. The larger (eastern) group comprised 41 escorted merchantmen carrying the main invasion force.

Under the Dutch Admiral Karel Doorman, a force of five cruisers (including the *Exeter*) and 10 destroyers sailed to intercept them. On paper, the enemy covering force of four cruisers and 15 destroyers was comparable, but in individual size, armament and morale it was far superior. After an opening gunnery duel, the Japanese launched a determined torpedo attack. This virtually coincided with the *Exeter*, second in the cruiser line, being hit in a boiler room by a 203-mm (8-in) shell from the *Nachi*. Blazing, her speed cut to only 5 kts, the *Exeter* pulled out of line, those ships astern being thrown into confusion.

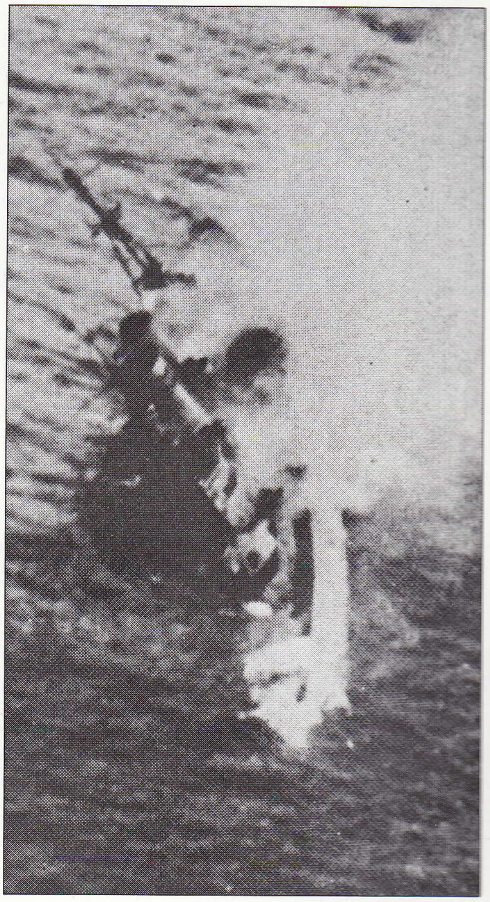
Covered by four destroyers making smoke, the *Exeter* turned south, carrying, unfortunately, the liaison officer and codebooks through which the Dutch-speaking Doorman communicated with the remainder of his English-speaking force.

Successive probes by Doorman's reorganized group against the Japanese transports were successfully parried by the enemy, the Allies being forced back to the point where the limping *Exeter* again became involved. Hard pressed by enemy light cruisers and destroyers, she was saved by her own destroyers' spirited defence, for the loss of HMS *Electra*.

Again the main thrust of the action flowed to the northward as a sporadic series of short engagements. After dark, disaster struck as Doorman was killed when both his Dutch cruisers were sunk, but the *Exeter* and her remaining screen meanwhile made Surabaya safely. Refuelled and patched, the little group sailed the following evening to attempt an escape to Ceylon, the ABDA combined force had ceased to exist. They were spotted even as they left by Japanese reconnaissance aircraft and, though she was capable of 23 kts again by daybreak on 1 March, the *Exeter* found herself steering into a fresh enemy force of four heavy cruisers and four destroyers. Quarter was neither offered nor sought, and the unequal action lasted for over two hours. The *Exeter* was served valiantly by her two destroyers, HMS *Encounter* and the USS *Pope*, which made smoke and a succession of offensive sorties against the Japanese force, which had split to attack from each side. Inevitably the cruiser eventually succumbed, rolling over to starboard after sustaining gun and torpedo hits. Her gallant destroyers survived her by a bare half hour.

The valour and sacrifice shown by the Allied force was virtually for nothing, delaying the Japanese schedule by hardly 24 hours. The action underlined the high efficiency of the Imperial Japanese Navy and graphically demonstrated the continuing need for Allied fleets to work together regularly to standardize procedures. If that lesson were learned and carried through to current NATO practice, the *Exeter* and her compatriots did not perish in vain.

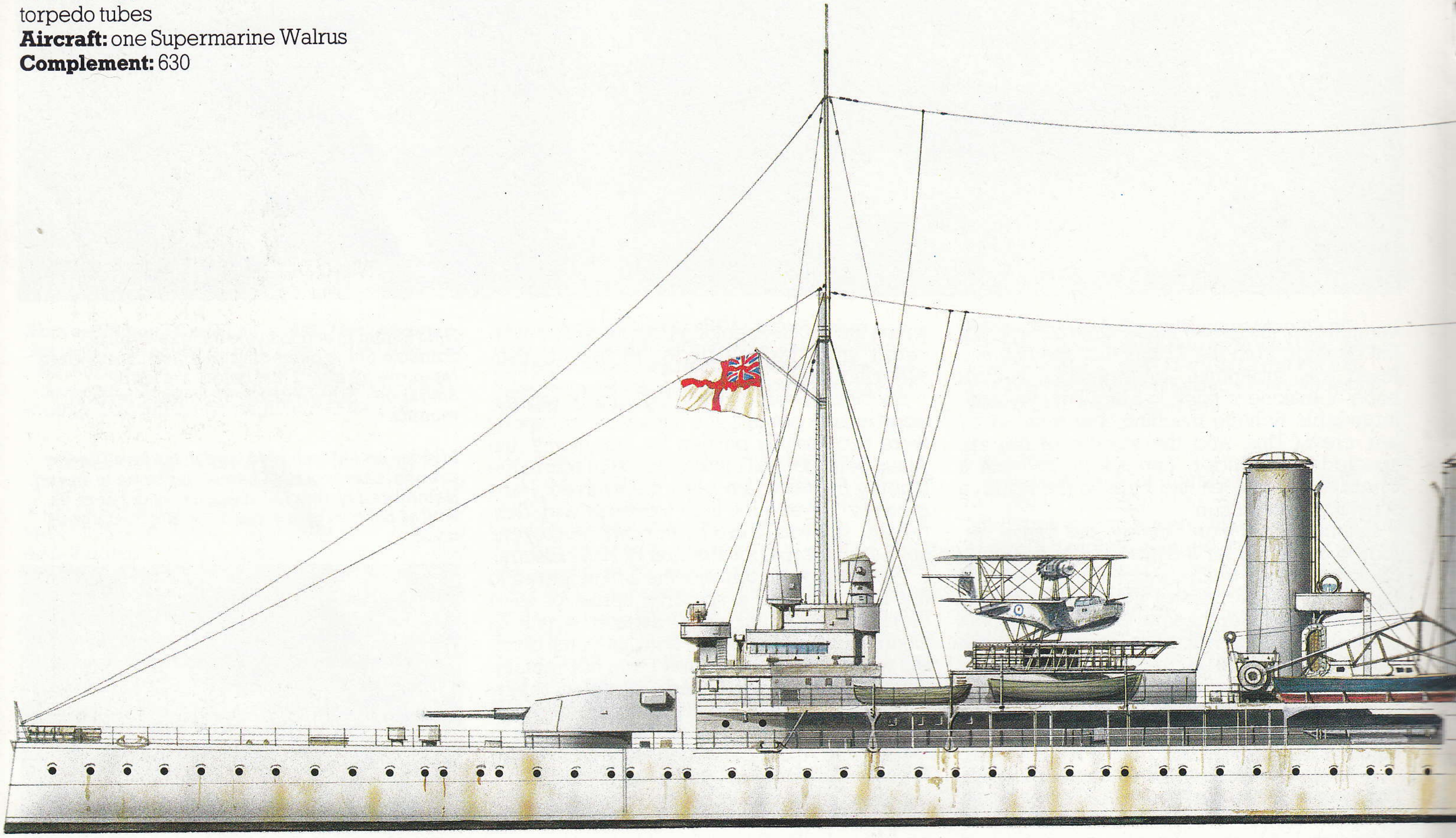
Midday on 1 March 1943, and in the Java Sea the eventful career of HMS Exeter *has come to an end. Hammered by four Japanese heavy cruisers, as well as by destroyer torpedoes, she finally goes under.*

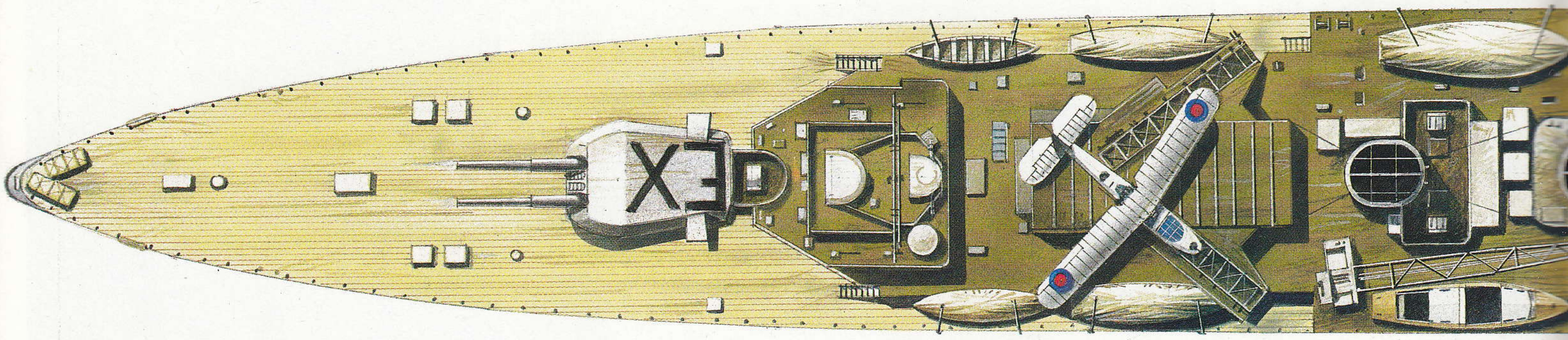


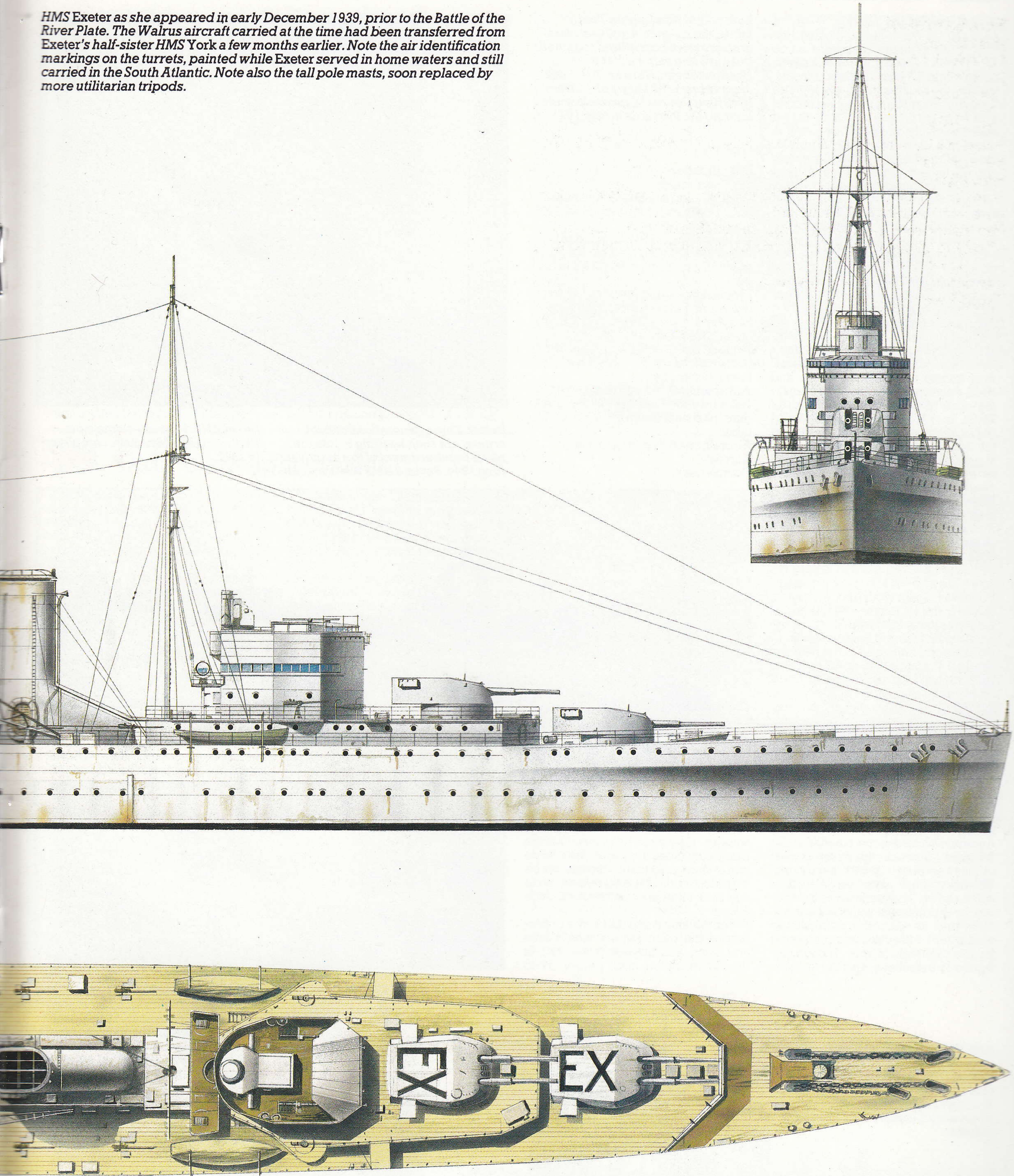
HMS *Exeter* in Action

Specification

HMS *Exeter*
Launched: 1 August 1928
Completed: 23 July 1931
Displacement: 8390 tons standard and 10,490 tons full load
Dimensions: length 175.25 m (575 ft); beam 17.58 m (58 ft); draught 6.17 m (20 ft 3 in)
Propulsion: Parsons geared turbines delivering 80,000 shp (59656 kW) to four shafts
Speed: 32 kts
Armour: belt 76.2 mm (3 in); ammunition spaces 25.4-101.6 mm (1-4 in); turrets and barbettes 25.4 mm (1 in)
Armament: six 203-mm (8 in) 50-calibre Mk VII, four 101-6-mm (4-in) 45-calibre QF Mk V AA and two 2-pdr AA guns, and six 533-mm (21-in) torpedo tubes
Aircraft: one Supermarine Walrus
Complement: 630







HMS Exeter *as she appeared in early December 1939, prior to the Battle of the River Plate. The Walrus aircraft carried at the time had been transferred from* Exeter*'s half-sister HMS* York *a few months earlier. Note the air identification markings on the turrets, painted while* Exeter *served in home waters and still carried in the South Atlantic. Note also the tall pole masts, soon replaced by more utilitarian tripods.*

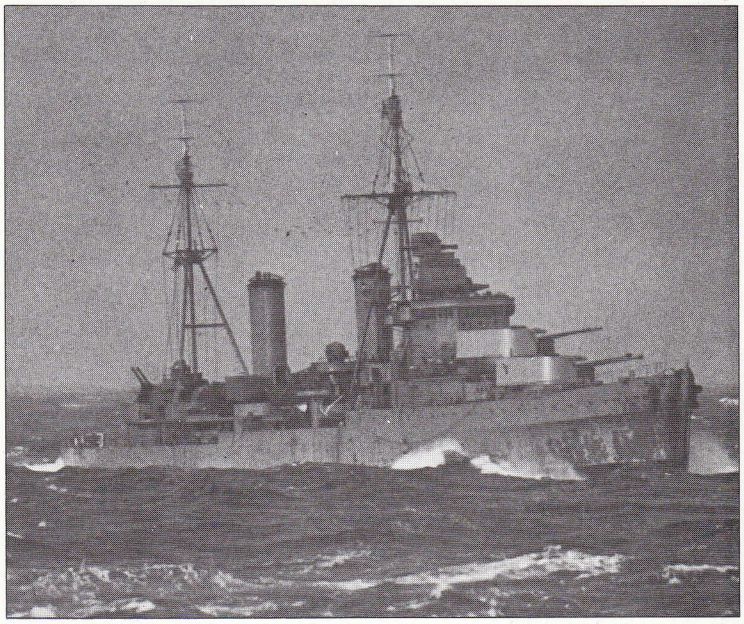
UK

'Arethusa' class light cruiser

At the time of the London Treaty of 1930, the UK was building the first 152-mm (6-in) cruisers designed since World War I. Ostensibly replacements for the little 'C' and 'D' class cruisers, these were the five eight-gun **'Leander' class** ships designed around a twin-gun mounting tried experimentally on HMS *Enterprise*. A three-ship derivative, the **'Amphion' class**, differed mainly in having widely spaced funnels through the improved layout of machinery spaces.

Once ratified, the treaty imposed limits on the total replacement 152-mm (6-in) tonnage that the British were permitted to build, and the Admiralty experimented with a cut-down six-gunned version known as the **'Arethusa' class**. In tonnage terms, four could be built for three 'Leander' class ships, but they were considered too small and only four were built.

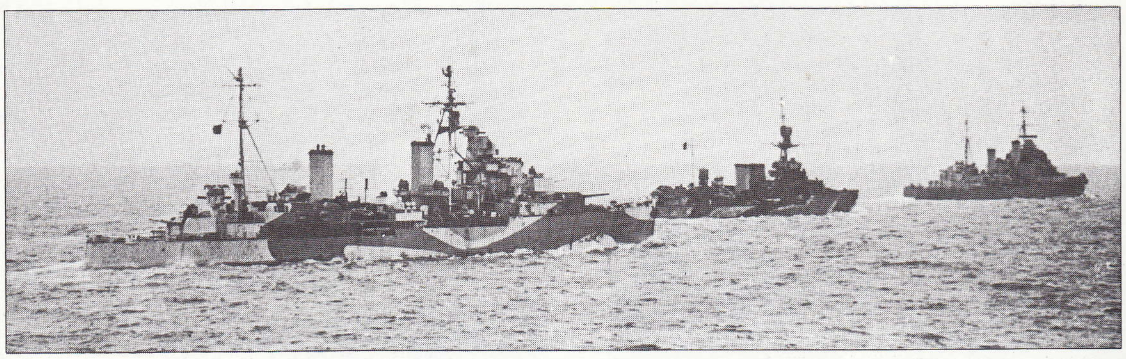
Despite their lack of size, the 'Arethusa' class cruisers found their ideal slot in the Mediterranean war. Best known were HMS *Aurora* and HMS *Penelope* which, while forming the core of Force K working out of Malta in 1941, destroyed convoyed Italian shipping at a rate which caused the Axis armies in North Africa acute supply problems. Both were damaged on the night when Force K was very nearly destroyed in a minefield. The *Penelope*, repaired, went on to see the most hard-fought of the Malta convoys, including Admiral Vian's superb defence at 2nd Battle of Sirte in March 1942. Docked again in Malta, she was so riddled with splinters as to earn the soubriquet 'HMS Pepperpot'. Together again with the *Aurora* in Force Q the *Penelope* saw the end of Axis ambitions in North Africa, going on to the Sicilian and Salerno landings. Bombed and damaged in the Aegean, she saw her last action at Anzio, being sunk by a submarine's torpedo whilst returning to Naples in February 1944. Also sunk in the war was HMS *Galatea*.



Built within Washington Treaty limits, the six-gun 'Arethusa' class cruisers were considered too small, but gave fine service in the Mediterranean. Here an 'Arethusa' class vessel is photographed from HMS King George V*, possibly while hunting the* Bismarck *in May 1941.*

Specification
'Arethusa' class
Ships in class (launched): *Arethusa* (1934), *Galatea* (1934), *Penelope* (1935) and *Aurora* (1936)
Displacement: 5,250 tons standard
Dimensions: length 154.2 m (506 ft); beam 15.5 m (51 ft); draught 4.2 m (13 ft 9 in)
Propulsion: geared turbines delivering 64,000 shp (47725 kW) to four shafts
Speed: 32.25 kts
Armour: belt 51 mm (2 in); deck 51 mm (2 in); turrets 25 mm (1 in); conning tower 25 mm (1 in)
Armament: six 152-mm (6-in), eight 102-mm (4-in) AA, and eight 2-pdr AA guns, plus six 533-mm (21-in) torpedo tubes
Aircraft: one flying-boat (not in *Aurora*)
Complement: 470

Below: Three generations of light cruiser are seen heading to join the naval bombardment of Normandy in June 1944. Beyond HMS Arethusa *can be seen HMS* Danae*, dating from 1918, and HMS* Mauritius*, completed in 1941.*

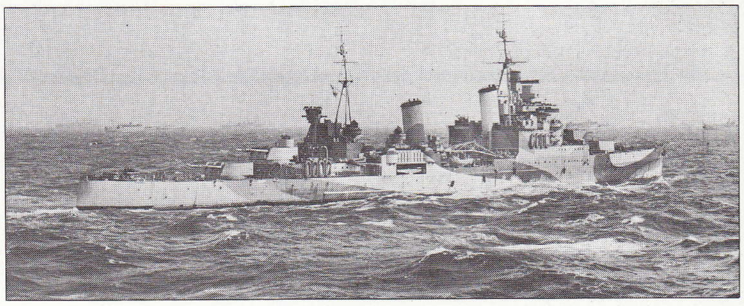


UK

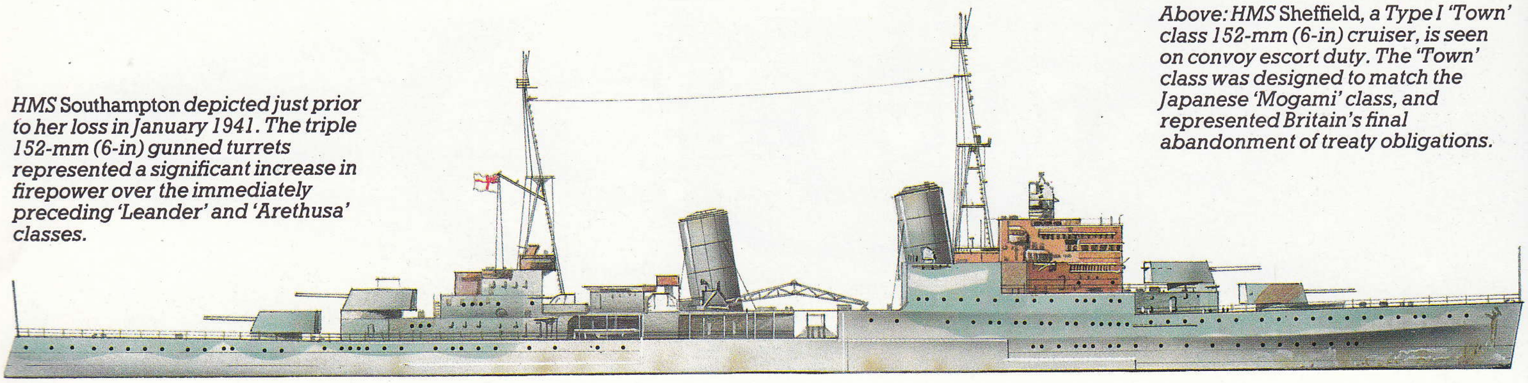
'Town' class heavy cruiser

The eight **'Southampton'** or **'Town' class** cruisers represented the end of British involvement with treaty obligations. With their 'Brooklyn' class the Americans had matched the Japanese 'Mogami' class, and the Admiralty felt obliged to respond with a powerful 152-mm (6-in) cruiser aimed at fleet work rather than commerce protection, as was the case with the 'Leander' class and its successors. Launched during 1936-7 the class was completed for the outbreak of war. Though designed on a smaller scale than the classes that had brought about their building, these ships carried 12 reliable guns in a new-pattern triple turret, and could maintain more than 32 kts in a seaway. They were used mainly in the European theatre, where they were more than adequate; though three were lost in the Mediterranean, none was sunk through conventional surface action.

For the ship's size and scale of protection the main battery was a little ambitious, and the last three units of the 'Southampton' class proper (HMS



Above: HMS Sheffield*, a Type I 'Town' class 152-mm (6-in) cruiser, is seen on convoy escort duty. The 'Town' class was designed to match the Japanese 'Mogami' class, and represented Britain's final abandonment of treaty obligations.*



HMS Southampton *depicted just prior to her loss in January 1941. The triple 152-mm (6-in) gunned turrets represented a significant increase in firepower over the immediately preceding 'Leander' and 'Arethusa' classes.*

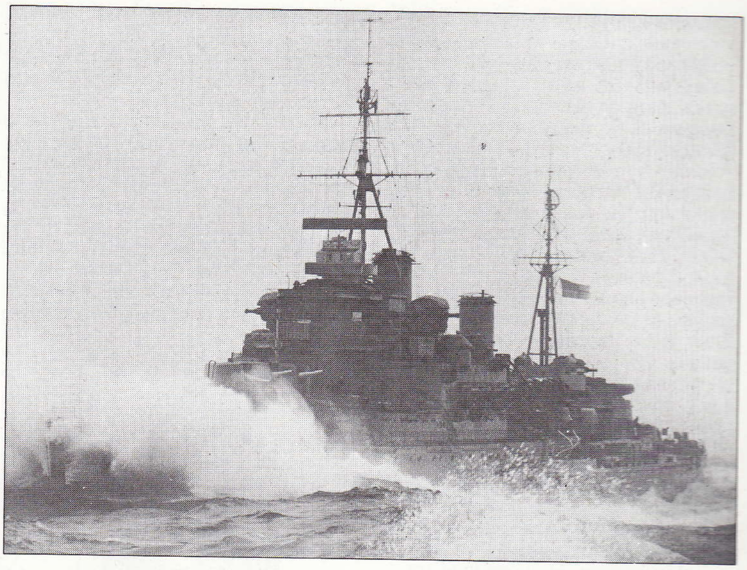
Liverpool, HMS *Manchester* and HMS *Gloucester*) having an increased beam. Later modernizations saw the removal of X turret and the enhancement of the AA armament.

In 1938 two examples of an improved version were launched. While carrying the same armament as their predecessors HMS *Belfast* and HMS *Edinburgh* were larger, better protected and had more powerful machinery. All of the 'Town' class ships were well built, giving in some cases over 30 years of useful service. Indeed the *Belfast* is still afloat as the sole remaining example of a long line of British cruisers.

Developed from the 'Town' class was the **'Fiji'** or **'Crown Colony' class** (11 ships) and its first derivative, the **Swiftsure' class** (six ships). Smaller but slightly faster, these were emergency programme ships and, while effective in service, their inferior construction was reflected in their shorter life-spans.

Specification

'Town' class (Type III)
Ships in class (launched): Type I or 'Southampton' class *Newcastle* (1936), *Southampton* (1936), *Birmingham* (1936), *Glasgow* (1936) and *Sheffield* (1936); Type II or 'Liverpool' class *Liverpool* (1937), *Manchester* (1937) and *Gloucester* (1937); and Type III or 'Belfast' class *Belfast* (1938) and *Edinburgh* (1938)
Displacement: 10,550 tons standard and 13,175 tons full load
Dimensions: length 187.0 m (613 ft); beam 19.3 m (63 ft 3 in); draught 5.3 m (17 ft 6 in)
Propulsion: Parsons geared turbines delivering 82,500 shp (61520 kW) to four shafts
Speed: 32 kts
Armour: belt 114 mm (4.5 in); deck 51 mm (2 in); turrets 25-63.5 mm (1-2.5 in); conning tower 102 mm 94 in)
Armament: 12 152-mm (6-in), eight 102-mm (4-in) AA, and eight or 16 2-pdr guns, plus six 533-mm (21-in) torpedo tubes
Aircraft: three flying-boats
Complement: 850



Developed from the 'Town' class, the 'Crown Colony' class cruisers such as HMS* Kenya *took wartime lessons into account while being built. Shorter but slightly faster than their predecessors, they had much improved secondary ammunition supply.

UK

'Dido' class light cruiser

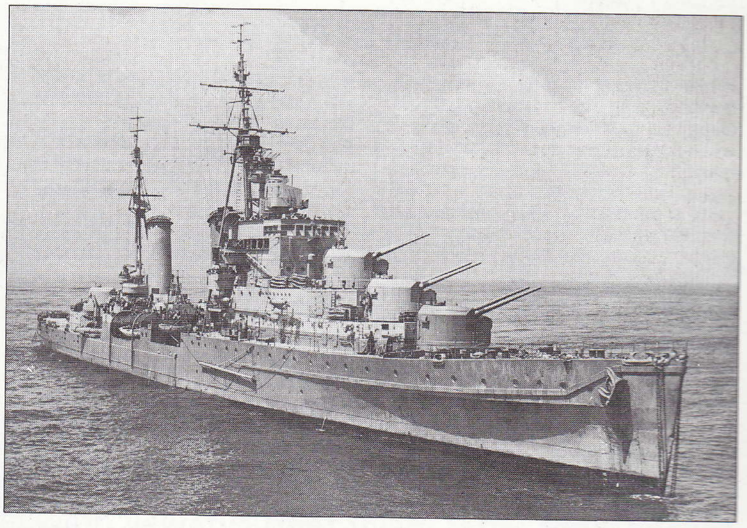
An increasing awareness of the threat from aerial attack was apparent in the warship design programmes just before World War II. Besides, for instance, rebuilding some of its older cruisers as AA ships, the Royal Navy acquired the 16-strong **'Dido' class** in two groups for close defence work. Only a little larger than the 'Arethusa' class cruisers, the original 11 ships had a lean, elegant appearance, beautifully proportioned. They had no secondary armament, the main battery being 10 133-mm (5.25-in) guns in the twin mountings developed as a secondary weapon for the 'King George V' class battleships. These were light enough to permit three superimposed mountings forward, though in later years the proliferation of tophamper resulted in the landing of the upper, or Q mounting.

The last five ships, labelled **'Improved Dido' class** ships, had eight-gun fits from the start, with shorter vertical funnels and sturdier masts. These modifications did nothing for their looks but the ships certainly served much farther afield, even for Arctic convoy escort, whereas the earlier ships were used mainly in the Mediterranean. In the latter theatre they were superb and, though HMS *Spartan* of the later group was sunk by glider bomb attack off Anzio, none was destroyed by direct air attack.

It could not be claimed that the 133-mm (5.25-in) weapon was the ideal dual-purpose gun, for it was rather on the light side for surface engagements against the protected ships of the day yet too heavy for effective use against aircraft, with too slow a rate of fire and reaction. In the post-war fleet the 'Dido' class ships proved of little more use to the Royal Navy than the equivalent 'Atlanta' class, did to the US Navy, and most of them had been scrapped by the end of the 1950s. Wartime losses were HMS *Charybdis*, HMS *Hermione*, HMS *Bonaventure*, HMS Naiad and HMS *Spartan*.

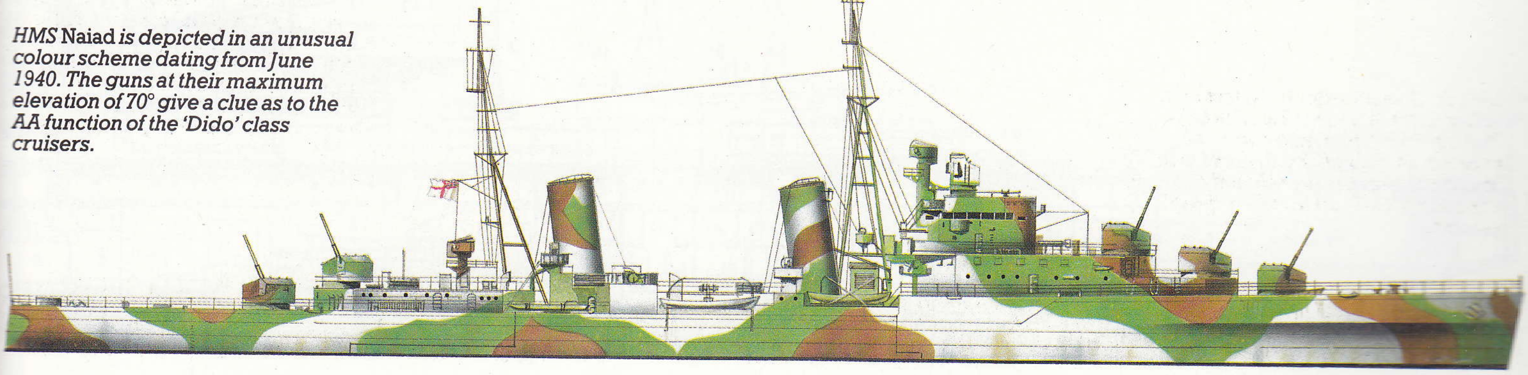
Specification

'Dido' class (Type II)
Ships in class (launched): Type I *Dido* (1939), *Euryalus* (1939), *Naiad* (1939), *Phoebe* (1939), *Sirius* (1940), *Bonaventure* (1939), *Hermione* (1939), *Charybdis* (1940), *Cleopatra* (1940), *Scylla* (1940) and *Argonaut* (1941); Type II *Bellona* (1942), *Black Prince* (1942), *Diadem* (1942), *Royalist* (1942) and *Spartan* (1942)
Displacement: 5,770 tons standard and 6,970 tons full load
Dimensions: length 156.3 m (512 ft); beam 15.4 m (50 ft 6 in); draught 5.3 m (17 ft 3 in)
Propulsion: Parsons geared turbines delivering 64,000 shp (47725 kW) to four shafts
Speed: 32.25 kts
Armour: belt 76 mm (3 in); deck 35 mm (1 in); turrets 25-38 mm (1-1.5 in); barbettes 13-19 mm (0.5-0.75 in); conning tower 25 mm (1 in)
Armament: eight 133-mm (5.25-in) DP, eight or 12 2-pdr AA, and 12 20-mm AA guns, plus six 533-mm (21-in) torpedo tubes **Complement:** 535



HMS* Dido *on fire support duty off Gaeta during the drive up the Italian peninsula. The dual purpose 113-mm (5.25-in) turrets were originally designed as secondary armament for the 'King George V' class battleships

HMS* Naiad *is depicted in an unusual colour scheme dating from June 1940. The guns at their maximum elevation of 70° give a clue as to the AA function of the 'Dido' class cruisers.



JAPAN

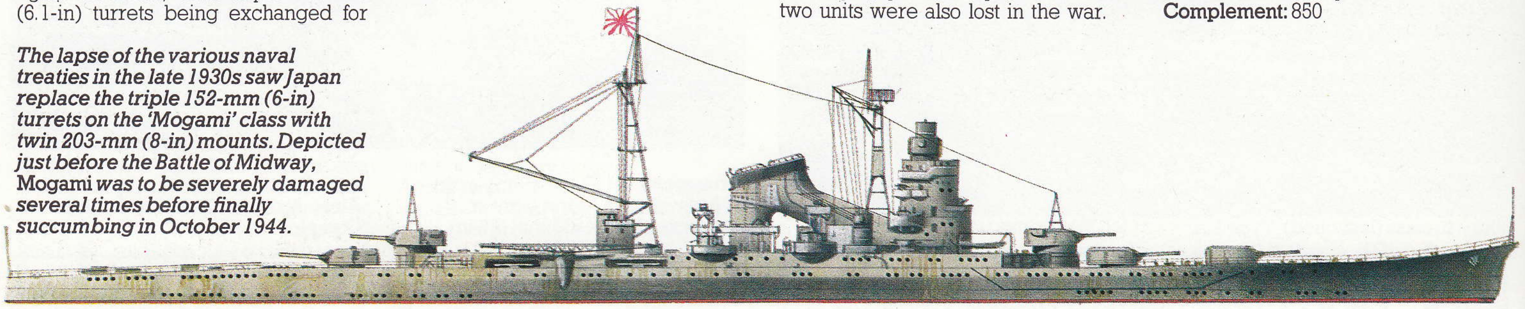
'Mogami' class heavy cruiser

Unlike her earlier naval model, the UK, Japan took to the 203-mm (8-in) cruiser enthusiastically, her only light cruisers being her 140-mm (5.5-in) gunned scouts such as the 'Sendai' class. But because of the restrictions of the 1930 London Treaty, however, four large 155-mm (6.1-in) gunned ships were built as the **'Mogami' class**, this in turn stimulating the Americans to build the 'Brooklyn' class, each class having a 15-tun main battery. To achieve the high designed speed of 37 kts, the Japanese ships were very slender and proved to be dangerously vulnerable. They were, therefore, bulged externally in 1937. Less than two years later, all treaties having lapsed, they were again modified, their triple 155-mm (6.1-in) turrets being exchanged for twin 203-mm (8-in) turrets and the bulge being increased in size. Their speed was now barely 34 kts, the same as that of the 'Brooklyn' class but with 50 per cent extra power.

During World War II the class formed the coherent 7th Cruiser Squadron under the redoubtable Rear Admiral Kurita, and was continuously active. The *Mogami*, in company with the *Mikuma*, was instrumental in the destruction of the USS *Houston* and HMAS *Perth* after the Java Sea battle. Later, as part of the diversionary force involved in the Midway action, the two cruisers collided heavily before being attacked by carrier aircraft; the *Mikuma* was sunk but *Mogami*, with 300 dead, survived to fight another day.

In November 1943 the *Mogami*, together with a large force of the Japanese fleet, was caught unawares by air attack at Rabaul. Hit heavily, blazing and down by the bows from flooded magazines, she again just made it. She then survived the Battle of the Philippine Sea only to meet her end at the night action in the Surigao Strait. Battered by gunfire, she collided with the *Nachi* but, typically, went in again. Shattered but afloat, she was attacked next day by aircraft. Her surviving crew removed, she was then sunk by a Japanese torpedo. The other two units were also lost in the war.

Specification
'Mogami' class cruiser
Ships in class (launched): *Mogami* (1934), *Mikuma* (1934), *Suzuya* (1934) and *Kumano* (1936)
Displacement: 12,400 tons standard
Dimensions: length 203.9 m (669 ft); beam 20.2 m (66 ft 3 in); draught 5.8 m (19 ft)
Propulsion: geared turbines delivering 150,000 shp (111855 kW) to four shafts
Armour: belt 100 mm (3.9 in); deck 35 mm (1.5 in); turrets 25 mm (1 in)
Armament: 10 203-mm (8-in), eight 127-mm (5-in) DP and eight 25-mm AA guns, plus 12 610-mm (24-in) torpedo tubes
Aircraft: three floatplanes
Complement: 850



The lapse of the various naval treaties in the late 1930s saw Japan replace the triple 152-mm (6-in) turrets on the 'Mogami' class with twin 203-mm (8-in) mounts. Depicted just before the Battle of Midway, **Mogami** ***was to be severely damaged several times before finally succumbing in October 1944.***

JAPAN

'Myoko' class heavy cruiser

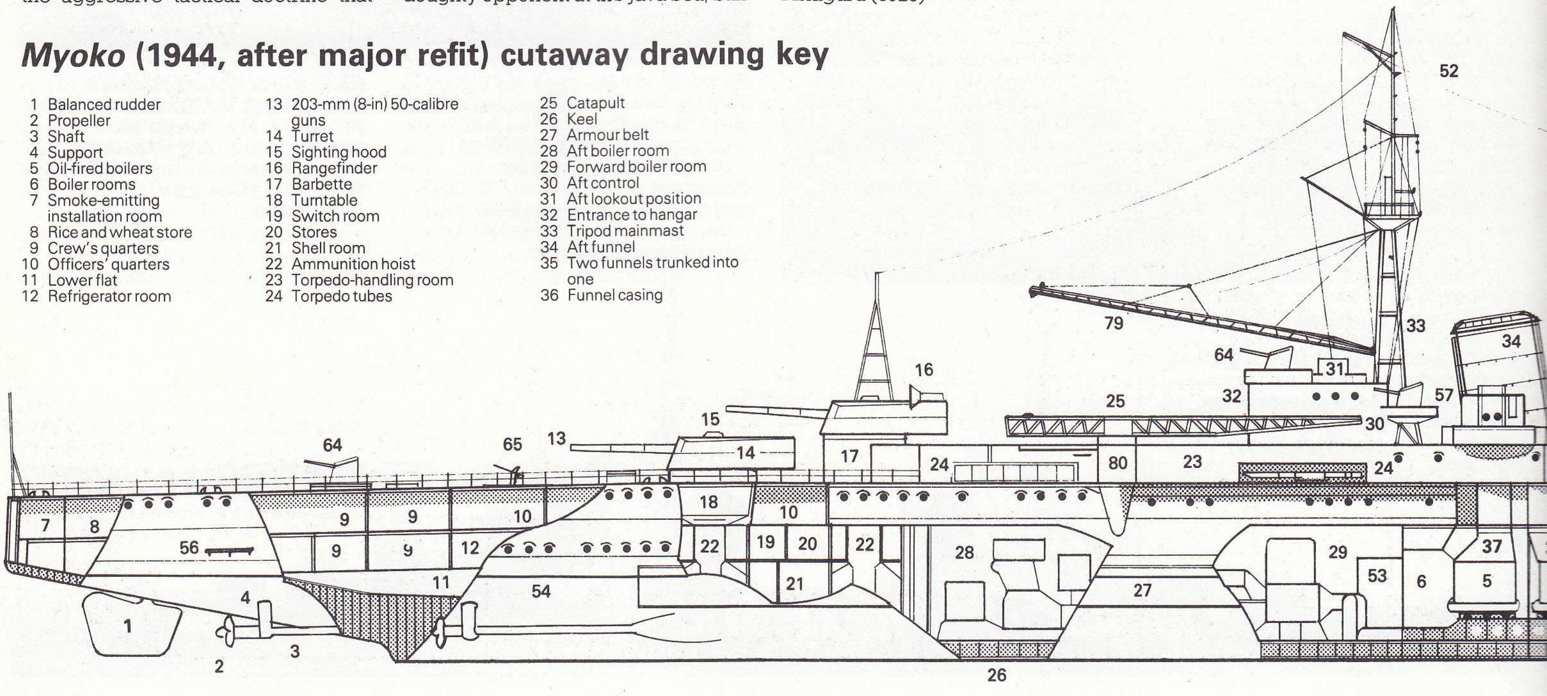
While showing a distinct family relationship with the preceding **'Aoba' class**, the four **'Myoko' class** cruisers were some 10 per cent longer and introduced the fearsomely massive aspect characteristic of the next decade of Japanese cruiser construction. Proportionately more 'beamy' than earlier classes, the 'Myoko' class ships mounted 10 203-mm (8-in) guns and still had improved protection worked in. Like most of their kind, they looked strange to Western eyes but were powerfully built and extraordinarily difficult to sink. Immediately before the outbreak of World War II, their torpedo armament was increased to 16 610-mm (24-in) tubes in keeping with the aggressive tactical doctrine that was to pay such handsome dividends. Their topweight reserves must thereby have been pushed to the limit, however, for when AA armament was urgently enhanced later in the war, some had the torpedo armament reduced again.

Like most of the hard worked Japanese cruiser classes, the 'Myoko' class ships were all lost (the *Myoko* being surrendered in a totally unserviceable state). Unusually, two of the four were sunk by the Royal Navy, the *Ashigara* being sunk by submarine torpedo in the Bangka Strait and the *Haguro* falling to a classically-executed night destroyer attack. The *Haguro* had been a particularly doughty opponent at the Java Sea, Sunda Strait and the action off Samar. She had survived Midway, Empress Augusta Bay and the 2nd Solomon Sea actions: It was, therefore, particularly gratifying for the renascent British Pacific Fleet to intercept her as she passed through the Malacca Strait in May 1945 en route to evacuate the garrison of the Andamans. Five destroyers of the 26th Flotilla attacked in divisions so that, in avoiding the torpedoes of the first, the *Haguro* ran foul of those of the second.

Specification
'Myoko' class
Ships in class (launched): *Myoko* (1927), *Nachi* (1927), *Haguro* (1928) and *Ashigara* (1928)
Displacement: 13,380 tons standard
Dimensions: length 201.7 m (661 ft 9 in) waterline; beam 20.7 m (68 ft); draught 6.3 m (20 ft 9 in)
Propulsion: geared turbines delivering 130,000 shp (96940 kW) to four shafts
Speed: 33.5 kts
Armament: belt 100 mm (3.9 in); deck 65-125 mm (2.5-5 in); turrets 40 mm (1.5 in)
Armament: 10 203-mm (8-in), eight 127-mm (5-in) DP and eight 25-mm AA guns, plus 16 610-mm (21-in) torpedo tubes
Aircraft: three floatplanes
Complement: 780

Myoko (1944, after major refit) cutaway drawing key

1 Balanced rudder
2 Propeller
3 Shaft
4 Support
5 Oil-fired boilers
6 Boiler rooms
7 Smoke-emitting installation room
8 Rice and wheat store
9 Crew's quarters
10 Officers' quarters
11 Lower flat
12 Refrigerator room
13 203-mm (8-in) 50-calibre guns
14 Turret
15 Sighting hood
16 Rangefinder
17 Barbette
18 Turntable
19 Switch room
20 Stores
21 Shell room
22 Ammunition hoist
23 Torpedo-handling room
24 Torpedo tubes
25 Catapult
26 Keel
27 Armour belt
28 Aft boiler room
29 Forward boiler room
30 Aft control
31 Aft lookout position
32 Entrance to hangar
33 Tripod mainmast
34 Aft funnel
35 Two funnels trunked into one
36 Funnel casing



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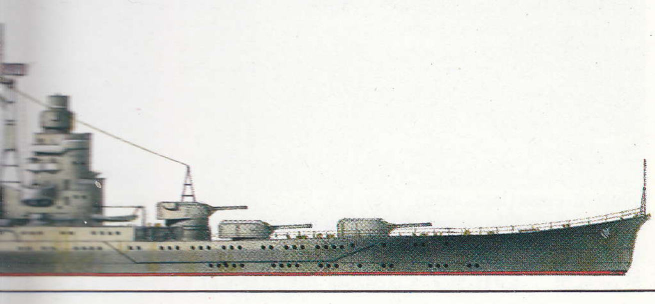
Aircraft: three floatplanes
Complement: 850



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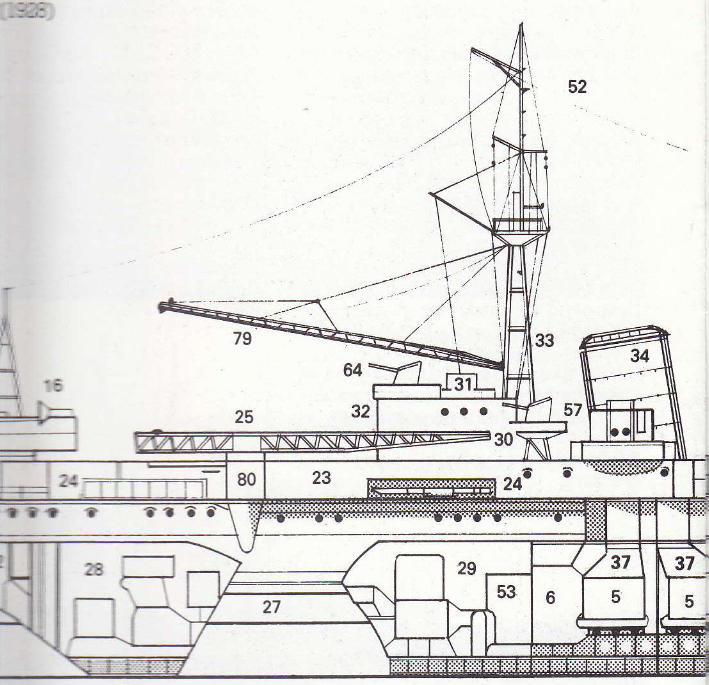

USA

'Northampton' class cruiser

The USA's first two Washington Treaty cruisers were the two **'Pensacola' class** heavy cruisers of 1929. Both had very active lives in World War II, but their design was not particularly successful, being cramped and having an extremely low freeboard. Their 10-gun 203-mm (8-in) armament (set, unusually, in mixed twin and triple turrets) was overambitious to the point where the ships were extremely tender. Even before their completion an improved design, the **'Northampton' class**, was well advanced. These not only regrouped the main battery into a homogeneous nine guns set in three triple turrets, but had a hull 4.4 m (14 ft 6 in) greater in length plus a raised forecastle to improve seaworthiness.

Of the class of six ships, the USS *Houston* was lost in March 1942 in the aftermath of the Java Sea debacle. The USS *Chicago* survived the shambles of the Savo Island battle in August 1942 with most of her bows removed by a Japanese torpedo. Guadalcanal still claimed her, however, for after repairs she returned shortly afterward to cover a replenishment trip to the island. Near Rennell Island she was sunk by air-dropped torpedoes. The USS *Northampton* also went down in the area, only a couple of miles from Savo, in the dreadful night action of Tassafaronga. An American force of five cruisers and six destroyers fell foul of the so-called 'Tokyo Express'. The latter were surprised, but acted with great resolution and speed, using their specialized night-fighting training to good advantage. Despite being encumbered with embarked troops and stores, they split into subdivisions and launched a devastating torpedo attack.

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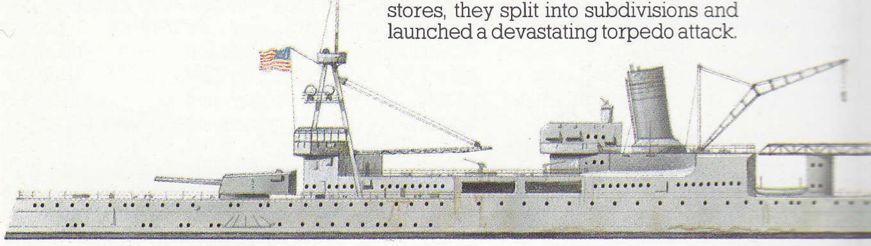
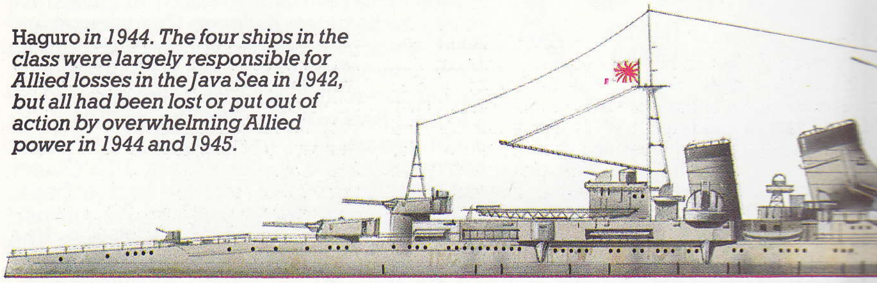


Haguro in 1944. The four ships in the class were largely responsible for Allied losses in the Java Sea in 1942, but all had been lost or put out of action by overwhelming Allied power in 1944 and 1945.



37 Funnel uptakes
38 Searchlight platform
39 Searchlight
40 Command post for AA guns
41 Foremast
42 Radar
43 Rangefinder for 203-mm (8-in) guns
44 Upper lookout position
45 Admiral's bridge
46 Navigation bridge
47 Chart room
48 Rangefinder for se
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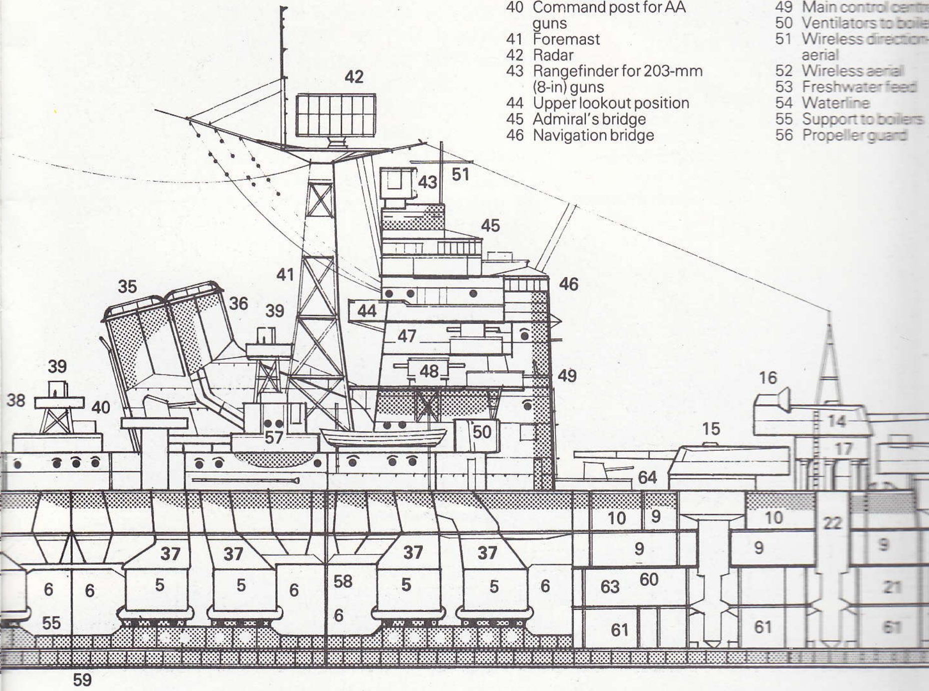
53 Freshwater feed
54 Waterline
55 Support to boilers
56 Propeller guard



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Specification

'Northampton' class

Ships in class (launched): *Northampton* (1929), *Chester* (1929), *Louisville* (1930), *Chicago* (1930), *Houston* (1929) and *Augusta* (1930)

Displacement: 9,050-9,300 tons standard and 12,350 tons full load

Dimensions: length 183.0 m (600 ft 3 in); beam 20.1 m (66 ft); draught 4.95 m (16 ft 3 in)

Propulsion: Parsons geared turbines delivering 107,000 shp (79790 kW) to four shafts

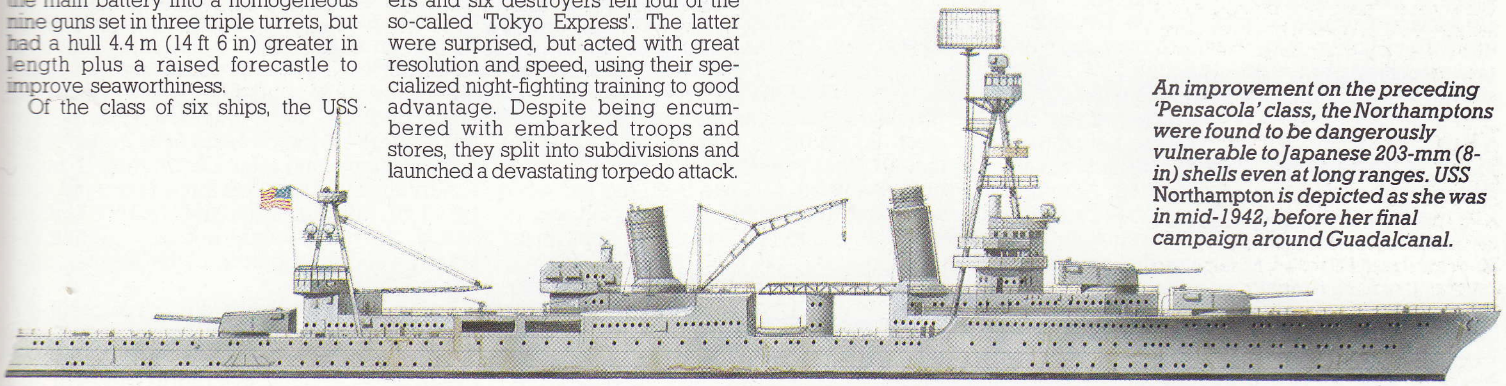
Speed: 32.5 kts

Armour: belt 76 mm (3 in); deck 51 mm (2 in); turrets 38-64 mm (1.5-2.5 in); barbettes 38 mm (1.5 in); conning tower 203 mm (8 in)

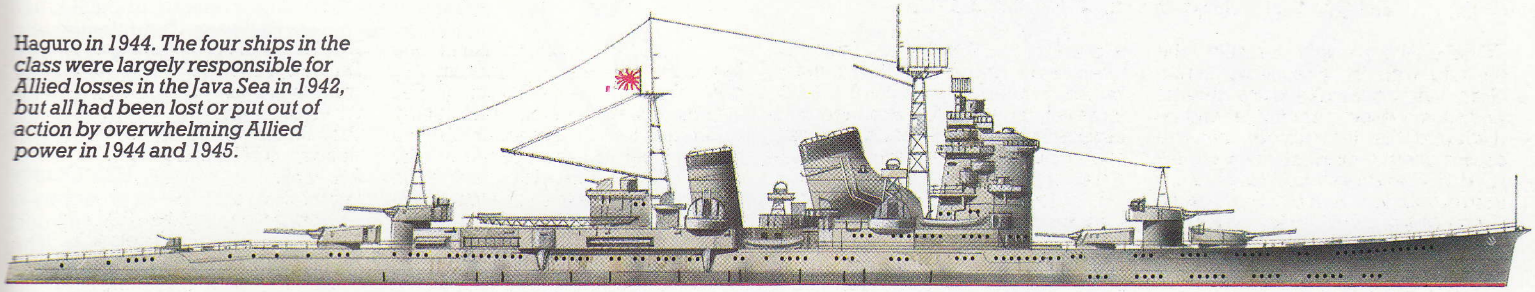
Armament: nine 203-mm (8-in), eight 127-mm (5-in) AA, two 3-pdr, and eight 12.7-mm (0.5-in) AA guns

Aircraft: four floatplanes

Complement: 1,200



An improvement on the preceding 'Pensacola' class, the Northamptons were found to be dangerously vulnerable to Japanese 203-mm (8-in) shells even at long ranges. USS* Northampton *is depicted as she was in mid-1942, before her final campaign around Guadalcanal.



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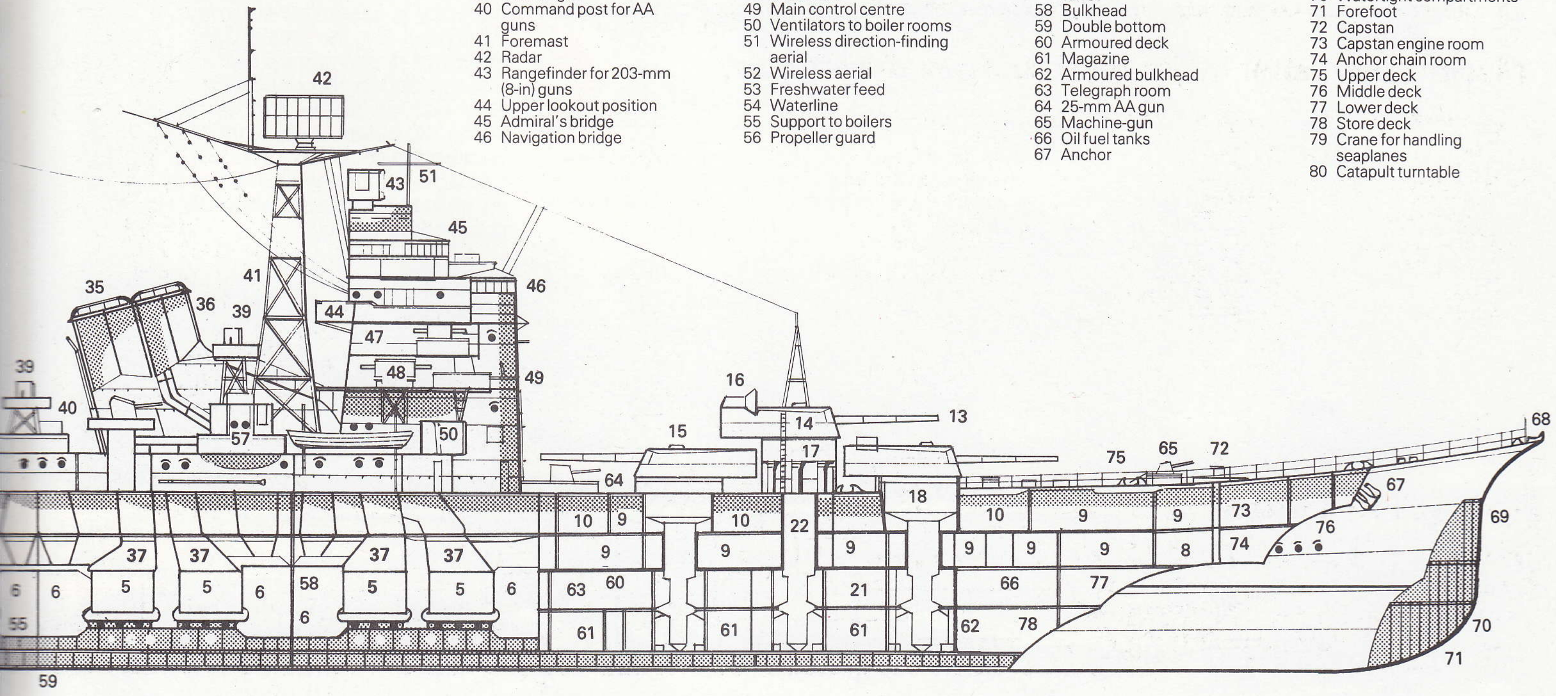
47 Chart room
48 Rangefinder for secondary armament
49 Main control centre
50 Ventilators to boiler rooms
51 Wireless direction-finding aerial
52 Wireless aerial
53 Freshwater feed
54 Waterline
55 Support to boilers
56 Propeller guard
57 Twin 127-mm (5-in) 40-calibre dual-purpose gun turret
58 Bulkhead
59 Double bottom
60 Armoured deck
61 Magazine
62 Armoured bulkhead
63 Telegraph room
64 25-mm AA gun
65 Machine-gun
66 Oil fuel tanks
67 Anchor
68 Bow hawser
69 Bow
70 Watertight compartments
71 Forefoot
72 Capstan
73 Capstan engine room
74 Anchor chain room
75 Upper deck
76 Middle deck
77 Lower deck
78 Store deck
79 Crane for handling seaplanes
80 Catapult turntable



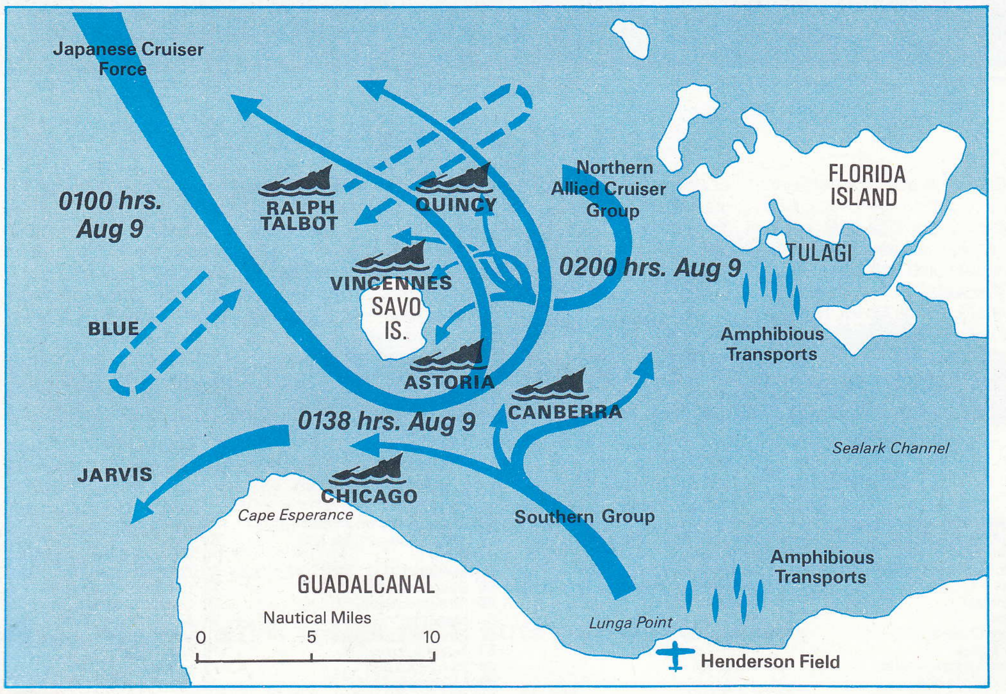
The Battle of Savo Island

The sea battles around the Solomon Islands in the last half of 1942 were a long, bloody sequence of short, sharp actions which often took place at night. The early days of the Guadalcanal landing saw American and Australian naval forces at the receiving end of a stunning series of blows, particularly on the night of 8 August 1942.

Following the heavy Japanese defeat at Midway in June 1942, the Americans began to go onto the offensive in the Pacific. This resulted, among other operations, in the seizure of Guadalcanal and neighbouring Tulagi as a first stage in the reconquest of the Solomons. The 1st Marine Division was landed on 7 August, and within hours gained control over the yet unestablished Japanese garrison. This early example of an amphibious assault entailed the presence offshore of a considerable number of transports, which would need an estimated four days to discharge. In addition to local naval cover, there was distant support from Admiral Fletcher's carrier group. These three carriers were virtually all the flightdecks remaining to the Americans in the Pacific and, anxious not to hazard them a moment longer than necessary, Fletcher made the controversial decision to withdraw after only 36 hours.

Momentarily caught off-balance by the assault, the Japanese reacted swiftly, Vice Admiral Mikawa sailing from Rabaul within hours of the American landing. He had about 1125 km (700 miles) to cover and his heavy cruiser flagship *Chokai*, accompanied by two light cruisers and a destroyer, reached full speed. By 14.00 on the day of the landing, he was 320 km (200 miles) on his way, rendezvousing near Bougainville with a powerful reinforcement of four more heavy cruisers. Driving on south eastward, Mikawa used the passage between the double chain of the Solomons, a channel that was to become all too familiar as 'The Slot'.

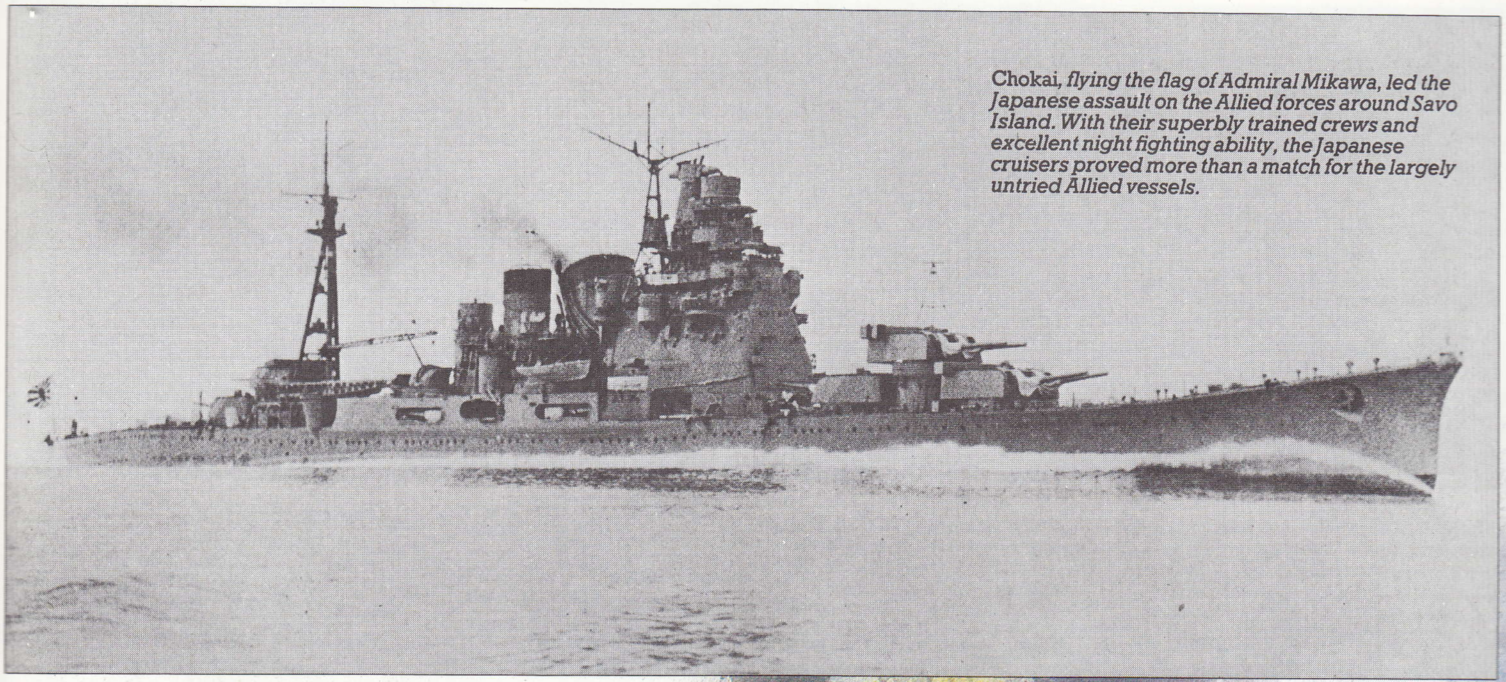
Expecting trouble from that direction, the Americans had early established aerial reconnaissance and Mikawa was spotted twice during the forenoon of 8 August. The war was still young, however, and the air reports were poorly worded, filed without urgency and spent hours filtering through the official machine. As a result, Rear Admiral Turner, in command of the amphibious force, learned (between 18.00 and 19.00 local time) both that a Japanese force was approaching and that Fletcher's carriers were leaving. Though the latter news was alarming, the former indicated wrongly that the enemy consisted largely of seaplane tenders. This would tally with the type of base that the enemy had been establishing on Tulagi, and such ships posed no direct threat. Imminent attack was not anticipated, therefore, and no special precautions taken. Indeed, there was available the not-inconsiderable force of six heavy cruisers, two light cruisers and four destroyers, a mixed American and Australian force under the command of Admiral Crutchley (RAN). Unfortunately, this force could not be concentrated because of the geography of the landing zone's approaches.



The Japanese cruiser force, under Admiral Mikawa, races past two radar picket destroyers in the darkness, making for the main target of the invasion beaches.

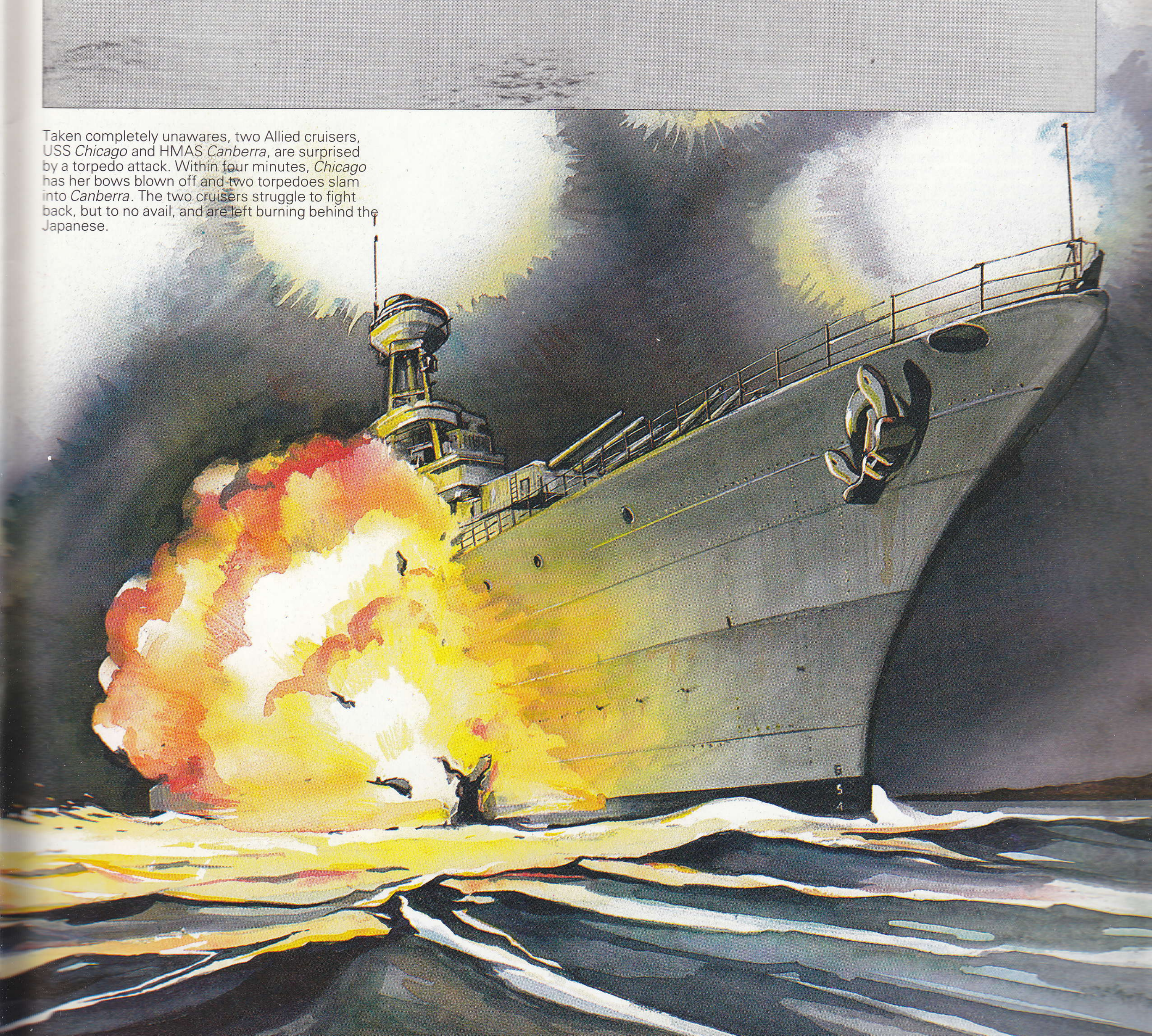
Between the beaches on Guadalcanal and neighbouring Florida and Tulagi islands is a deep channel between 24 and 40 km (15 and 25 miles) wide. At the wider (north western) end, which Mikawa was rapidly approaching, the sound is divided roughly equally by the round, mountainous blob of Savo Island, about 8 km (5 miles) in diameter. Between Guadalcanal and Savo, Crutchley had established a southern force, consisting of his flagship HMAS *Australia*, her sistership HMAS *Canberra* and the USS *Chicago*. Between Savo and Florida/Tulagi was a complementary northern force of three heavy cruisers, the USS *Astoria*, USS *Quincy* and USS *Vincennes*. Across the approaches to the north west were two radar-equipped American destroyers, posted as pickets. The less-threatened south eastern approaches to the beaches were covered by two light cruisers and two destroyers. On paper, at least, dispositions were sound.

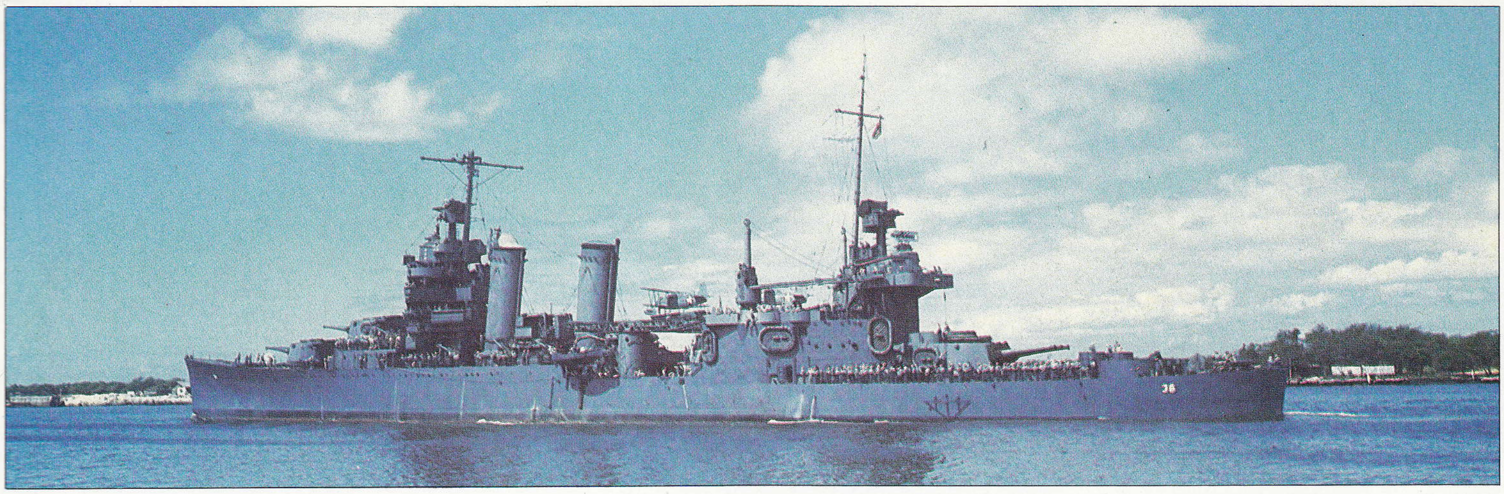
The evening of 8 August came in very dark, with low cloud and intermittent heavy rain, overlaid with the all-pervading heat and humidity so characteristic of the area. Turner, disturbed by the implications of Fletcher's withdrawal, summoned Crutchley to a conference to discuss the situation; the latter, reasonably enough in the conditions, travelled the 32 km (20 miles) or so in the *Australia* herself, leaving the southern force to his deputy in the *Chicago*. Crutchley arrived at 22.30. Mikawa, all unsuspected, was about 80 km (50 miles) distant and closing fast.



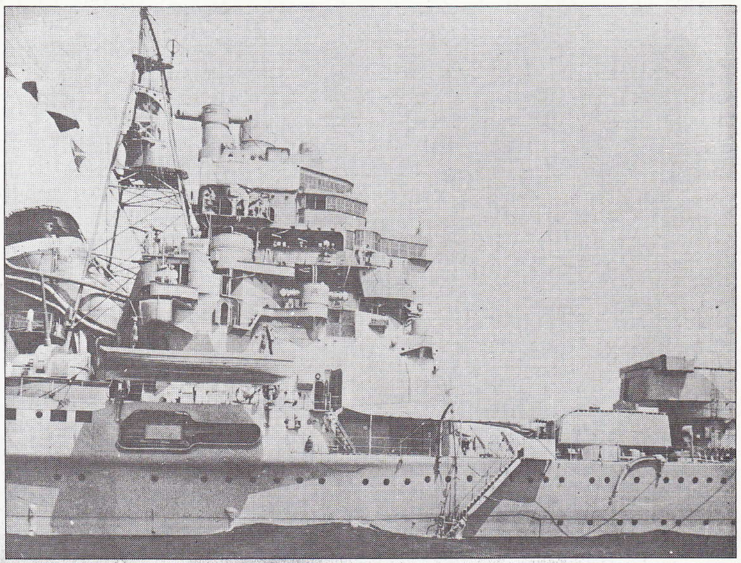
Chokai, flying the flag of Admiral Mikawa, led the Japanese assault on the Allied forces around Savo Island. With their superbly trained crews and excellent night fighting ability, the Japanese cruisers proved more than a match for the largely untried Allied vessels.

Taken completely unawares, two Allied cruisers, USS *Chicago* and HMAS *Canberra*, are surprised by a torpedo attack. Within four minutes, *Chicago* has her bows blown off and two torpedoes slam into *Canberra*. The two cruisers struggle to fight back, but to no avail, and are left burning behind the Japanese.



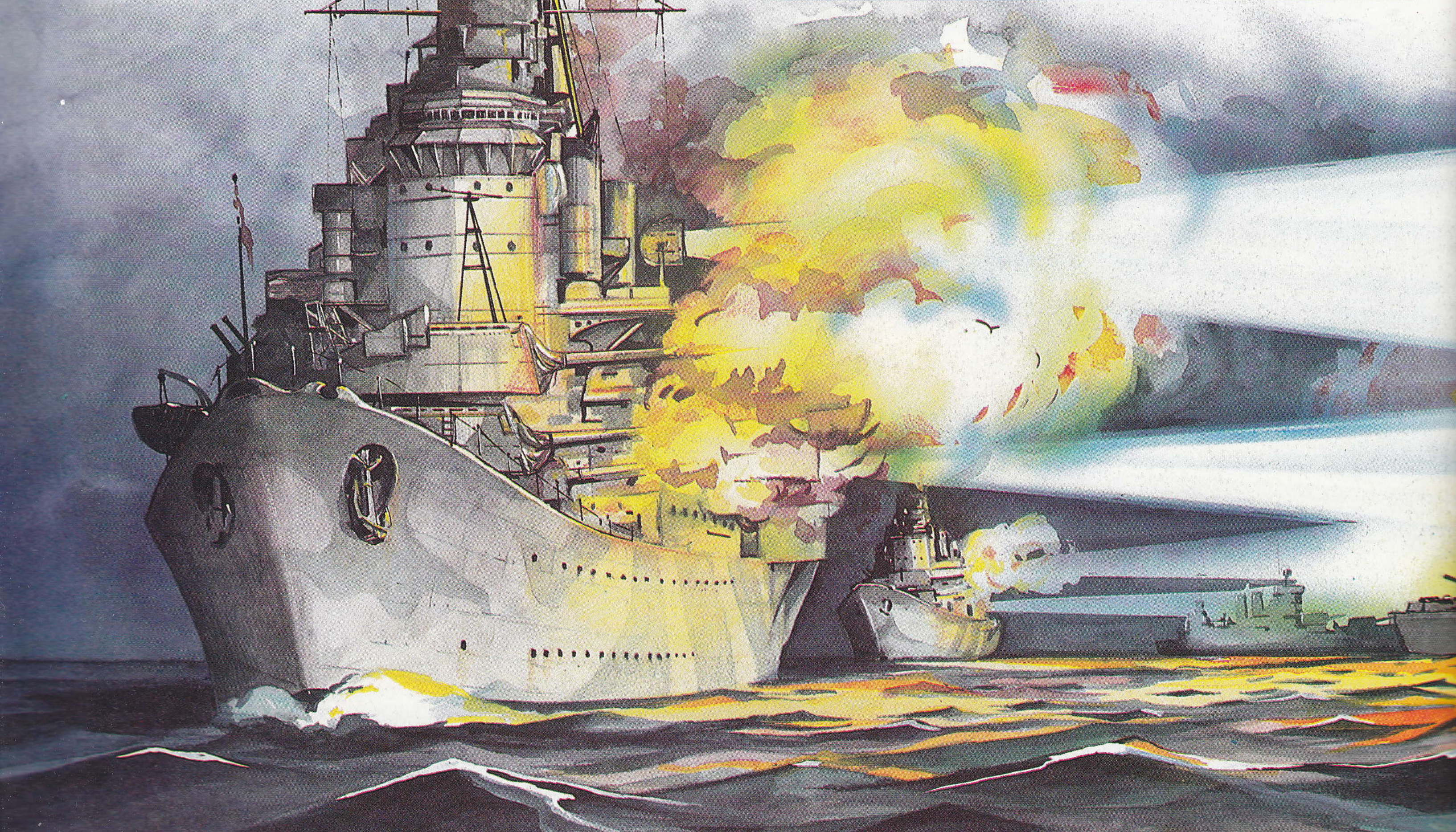


Above: The 'New Orleans' class cruisers had the unhappy distinction, shared with the Italian 'Zara' class, of losing three vessels in a single action. USS Minneapolis, *not present at Savo Island, is one of the type.*

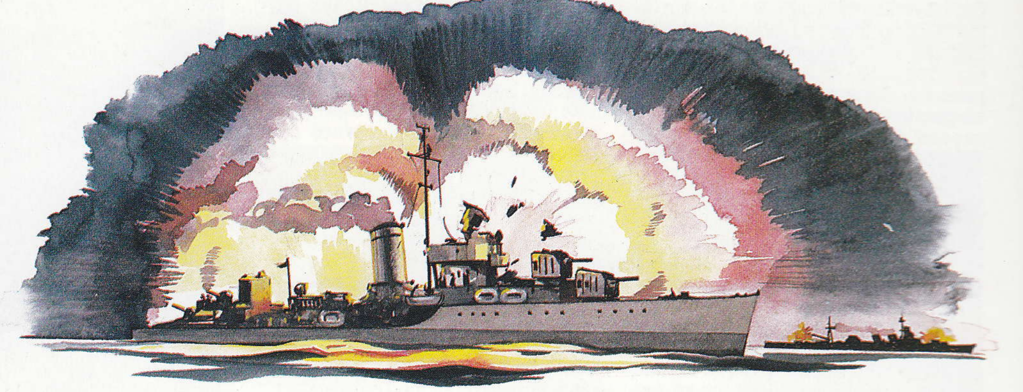


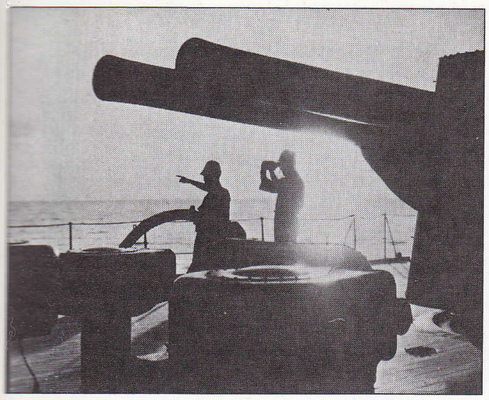
Right: Pictured in 1938, the massive superstructure of Chokai *typifies Japanese cruiser design before the war. American vessels of the same period were much less effectively armoured, their vulnerability to Japanese shells contributing to heavy early losses in the Solomons.*

Swinging north around Savo Island, Mikawa encounters the remaining Allied cruisers. Incredibly they had not seen or heard the gunfire, flares and explosions to the south, and were steaming in line ahead with guns unmanned.



Worried at the prospect of carrier attack by daylight, Mikawa withdraws, shooting up a picket destroyer on the way.





During the early stages of the Pacific war, the Imperial Japanese Navy was extremely well trained, and after sunset displayed great flexibility in action.

At 00.43 on 9 August the Japanese, in line ahead and led by the *Chokai*, made a visual sighting on an American destroyer at over 8 km (5 miles) despite the velvet darkness. She was the USS *Blue* which, with the USS *Ralph Talbot*, was slowly crisscrossing the strait as radar picket. Despite the length of the Japanese line and its approach from the very direction expected, it was not detected and passed between the two ships at about 26 kts.

Mikawa, anxious to attack and withdraw before the inevitable morning air strike from Fletcher's carriers, which he believed still to be present, risked losing surprise by launching reconnaissance aircraft. These were seen by the Americans but the significance of their being floatplanes (and, therefore, cruiser-based) was not grasped.

Still unsuspected, the Japanese had Savo abeam at 01.25 and sighted the two remaining southern force cruisers shortly after that.

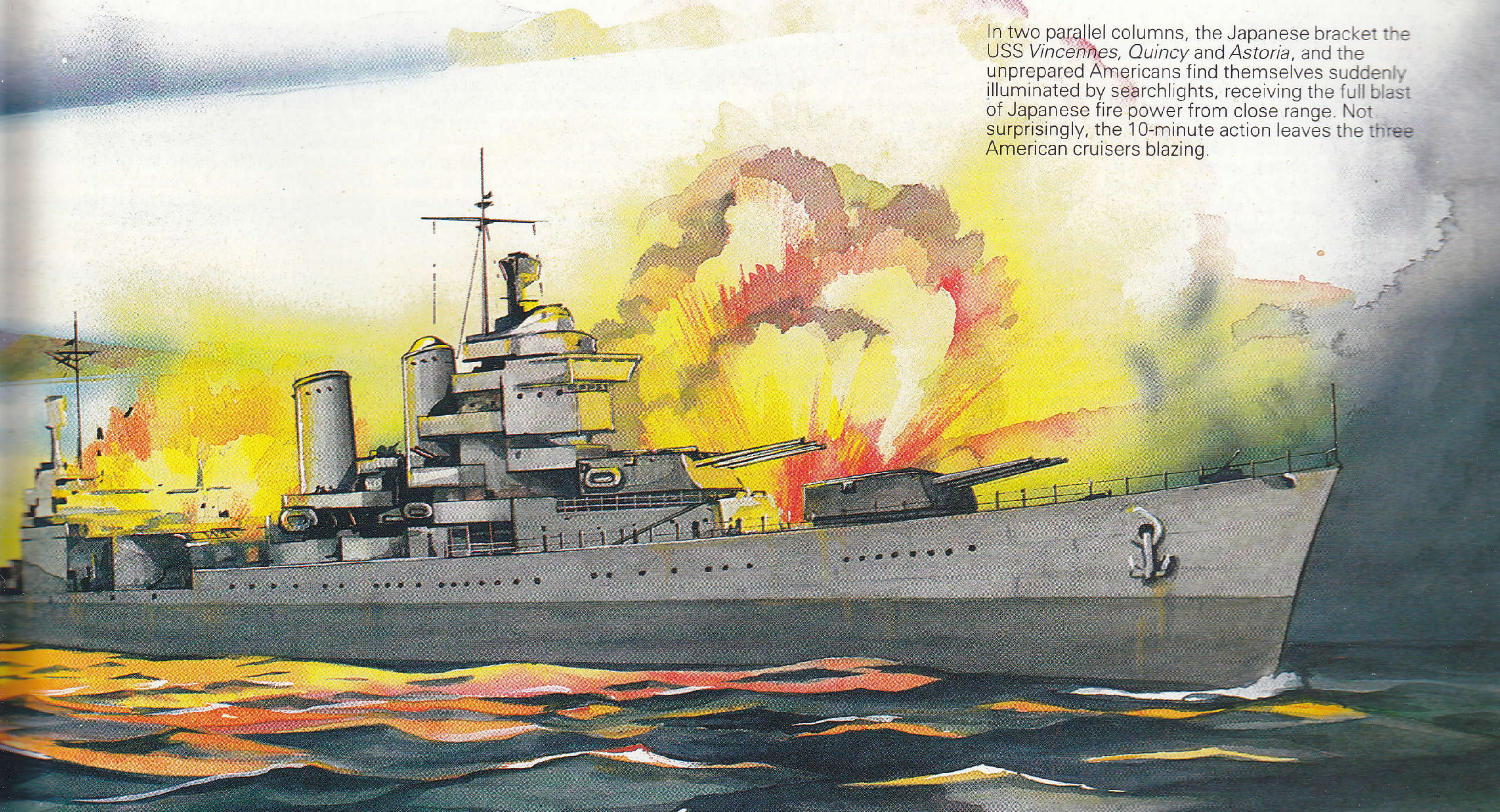
At 01.38 they opened their attack characteristically with a salvo of torpedoes and, minutes later, the peace of the night was split by air-dropped flares blooming simultaneously with two torpedoes slamming into the somnolent *Canberra*. Her senior ship, the *Chicago*, was equally surprised, her captain in his bunk. Even as general quarters sounded, the *Chicago*'s bows were shattered by a torpedo. The enemy was still invisible and the battle only four minutes old.

Desperately, the two injured cruisers struggled to respond but Mikawa swept by, scything in an arc around the back of Savo. The manoeuvre disrupted his line, so that it advanced in two parallel columns; as luck would have it these neatly bracketed the northern force cruisers. Incredibly, the *Chicago* had not alerted them to the situation and neither did they respond to the brief racket of battle only 8 km (5 miles) away.

Proceeding in line ahead at a stately 10 kts, unprepared, with guns unmanned and pointing fore-and-aft, they found themselves suddenly illuminated at close range by searchlights. It was worse than Matapan. At barely 365-m (400-yard) range the Japanese used everything, including 25-mm automatic weapons. The action lasted a bare 10 minutes, leaving the three American cruiser blazing, largely as a result of the extreme inflammability of their aircraft and hangars. Their response had been half-hearted because of their total surprise and almost universal reluctance to believe that it was the enemy firing at them.

Nothing significant now stood between Mikawa and his primary target, the transports. As though unnerved by his own success, however, he left them and ordered a retirement. It was shortly after 02.00. The predictable shooting-up of the picket destroyers was the last act and, after the final salvo from the *Yubari* at 02.23, peace returned. From the Japanese ships, Savo's serrated outline was etched clear against the glow of four burning ships, all of which sank within the next 12 hours, their bones being the first to grace what was to become known as 'Ironbottom Sound'.

Of the Japanese, only the two van ships, the *Chokai* and *Aoba*, suffered damage of any consequence, losing 38 dead. Over 1,000 Allied seamen perished, but their deaths were not in vain, for Guadalcanal was held, becoming a symbolic prize in a six-month war of attrition in which, finally, the Americans were undisputed victors.



In two parallel columns, the Japanese bracket the USS *Vincennes, Quincy* and *Astoria*, and the unprepared Americans find themselves suddenly illuminated by searchlights, receiving the full blast of Japanese fire power from close range. Not surprisingly, the 10-minute action leaves the three American cruisers blazing.

USA

'Cleveland' class cruiser

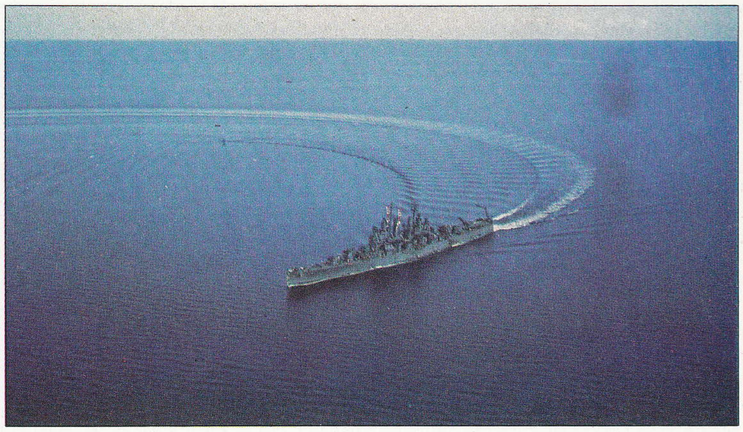
Stimulated by the Japanese 152-mm (6-in) 'Mogami' class, the Americans built the nine 15-gun **'Brooklyn' class** cruisers during the 1930s. For the war programmes, however, a more practical 12-gun layout was adopted, with enhanced secondary and AA batteries. While obviously derivatives of the 'Brooklyn' class, these new **'Cleveland' class** cruisers were beamier on about the same length, and were better protected. The name ship was laid down in July 1940 and five years later the class stood at 26 units, with a further nine hulls converted to fast light carriers (CVL) of the 'Independence' class. Three more were cancelled and a fourth completed as a guided-missile cruiser, making a total of 39, the largest cruiser programme ever.

As with the heavy cruisers, layout was improved by development of a single-funnelled version, the **'Fargo' class.** Only two of these were completed because of the war's end and the introduction of a fully automatic 6-in gun mounting. As a result of the extra bulk of its loading gear, this weapon was accommodated in a new twin mounting and, with its higher rate of fire fewer barrels per ship could have been expected. Even so, the US Navy still demanded 12 guns and the resultant six-turret ships, the **'Worcester' class** needed to be 21.7 m (69 ft 3 in) longer, with 20 per cent greater power.

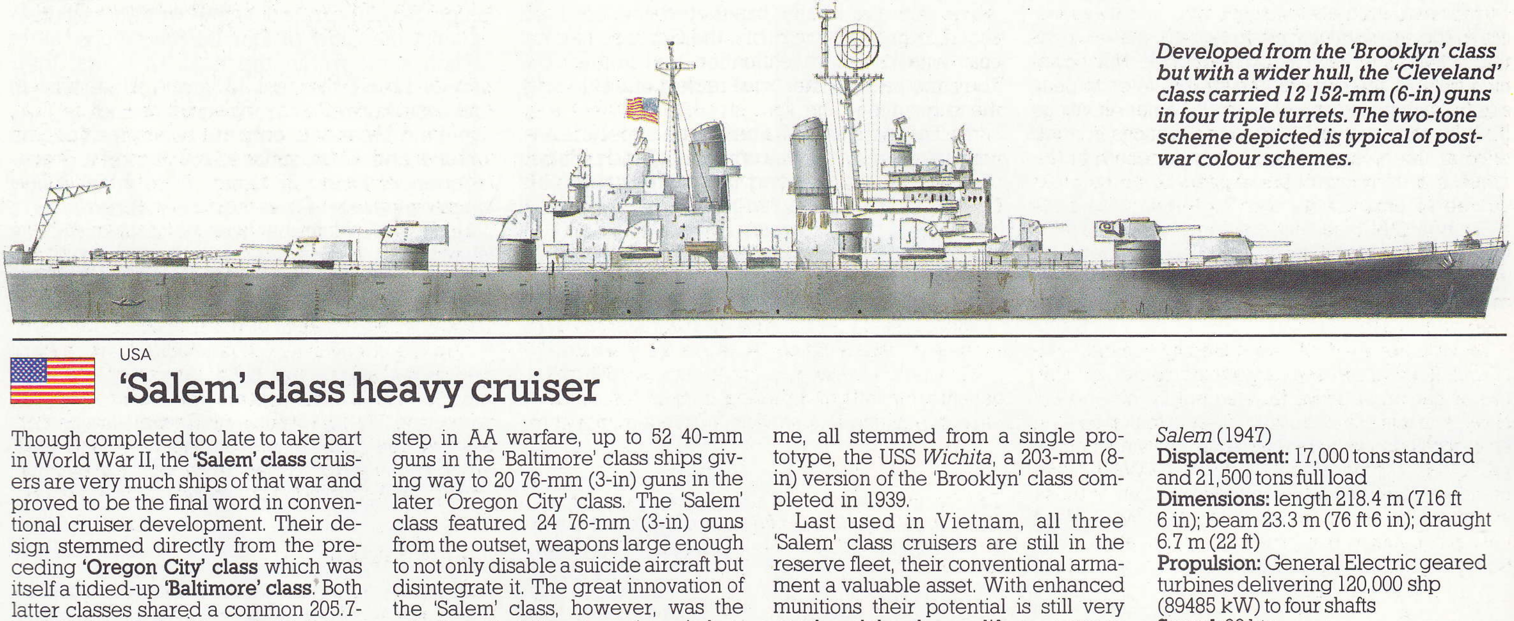
Like all guns of its generation, the automatic 152-mm (6-in) weapon arrived too late to avoid being overtaken by the guided missile. Only two 'Worcester' class ships were completed, being rebuilt aft as interim CLGs with the long-range Talos surface-to-air missile. These survived until recently, largely because their unfashionably spacious accommodation made them popular as peacetime flagships. No 'Cleveland' class ships were lost in World War II.

Specification
'Cleveland' class

Ships in class (launched): *Cleveland* (1941), *Columbia* (1941), *Montpelier* (1941), *Denver* (1942), *Santa Fe* (1942), *Birmingham* (1942), *Mobile* (1942), *Vincennes* (1943), *Pasadena* (1943), *Springfield* (1944), *Topeka* (1944), *Biloxi* (1943), *Houston* (1943), *Providence* (1944), *Manchester* (1946), *Vicksburg* (1943), *Duluth* (1944), *Miami* (1942), *Astoria* (1943), *Oklahoma City* (1944), *Little Rock* (1944), *Galveston* (1945), Amsterdam (1944), *Portsmouth* (1944), *Wilkes-Barre* (1943), *Atlanta* (1944), *Dayton* (1944), *Baltimore* (1942), *Boston* (1942), *Canberra* (1943), *Quincy* (1943), *Pittsburg* (1944), *St Paul* (1944), *Columbia* (1944), *Helena* (1945), *Bremerton* (1944), *Fall River* (1944), *Macon* (1944), *Toledo* (1945), *Los Angeles* (1944) and *Chicago* (1944)
Displacement: 10,000 tons standard and 13,775 tons full load
Dimensions: length 185.9 m (610 ft); beam 20.3 m (66 ft 6 in); draught 7.6 m (25 ft)
Propulsion: General Electric geared turbines delivering 100,000 shp (74570 kW) to four shafts
Speed: 33 kts
Armour: belt 38-127 mm (1.5-5 in); deck 76 mm (3 in); turrets 76-127 mm (3-5 in); barbettes 127 mm (5 in); conning tower 165 mm (6.5 in)
Armament: 12 152-mm (6-in), 12 127-mm (5-in) DP, eight (first two) or 24 (eight ships) or 28 (others) 40-mm AA, and between 10 and 21 20-mm AA guns
Aircraft: four floatplanes
Complement: 1,425



Twenty-six 'Cleveland' class vessels entered service during World War II. USS **Biloxi** ***was commissioned in August 1943 and broken up in 1962.***



Developed from the 'Brooklyn' class but with a wider hull, the 'Cleveland' class carried 12 152-mm (6-in) guns in four triple turrets. The two-tone scheme depicted is typical of post-war colour schemes.

USA

'Salem' class heavy cruiser

Though completed too late to take part in World War II, the **'Salem' class** cruisers are very much ships of that war and proved to be the final word in conventional cruiser development. Their design stemmed directly from the preceding **'Oregon City' class** which was itself a tidied-up **'Baltimore' class.** Both latter classes shared a common 205.7-m (675-ft) hull, the 'Oregon City' class adopting a single-funnelled layout and more compact superstructure to improve firing arcs.

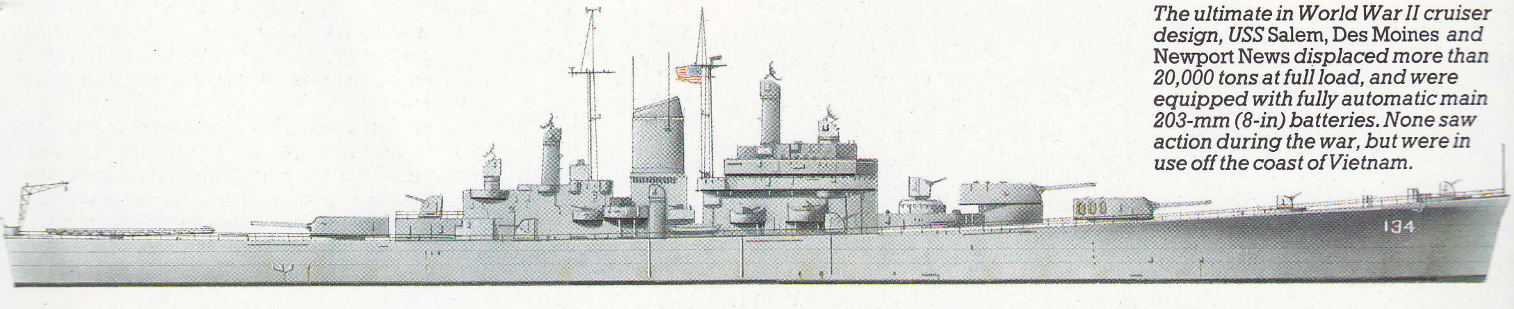
Though all shared the typically American fit of three triple 203-mm (8-in) turrets with three twin 127-mm (5-in) gunhouses disposed symmetrically at each end of the superstructure, these ships represented a transition step in AA warfare, up to 52 40-mm guns in the 'Baltimore' class ships giving way to 20 76-mm (3-in) guns in the later 'Oregon City' class. The 'Salem' class featured 24 76-mm (3-in) guns from the outset, weapons large enough to not only disable a suicide aircraft but disintegrate it. The great innovation of the 'Salem' class, however, was the adoption of a fully-automatic main battery, the ships' greater dimensions reflecting the extra bulk and magazine space required.

Amply-proportioned hulls permitted adequate protection for all these classes, the 'Salem' class particularly so. Interestingly, these close-associated groups, the complete American heavy cruiser war programme, all stemmed from a single prototype, the USS *Wichita*, a 203-mm (8-in) version of the 'Brooklyn' class completed in 1939.

Last used in Vietnam, all three 'Salem' class cruisers are still in the reserve fleet, their conventional armament a valuable asset. With enhanced munitions their potential is still very good, and they have a life expectancy limited only by their material condition. No ships from any of these classes was lost in World War II.

Specification
'Salem' class

Ships in class (launched): *Des Moines* (1946), *Newport News* (1947) and *Salem* (1947)
Displacement: 17,000 tons standard and 21,500 tons full load
Dimensions: length 218.4 m (716 ft 6 in); beam 23.3 m (76 ft 6 in); draught 6.7 m (22 ft)
Propulsion: General Electric geared turbines delivering 120,000 shp (89485 kW) to four shafts
Speed: 33 kts
Armour: belt 152-203 mm (6-8 in); deck 76 mm (3 in); turrets 152-mm (6 in); barbettes 152 mm (6 in); conning tower 203 mm (8 in)
Armament: nine 203-mm (8-in), 12 127-mm (5-in) DP, 24 76-mm (3-in) DP, and 12 20-mm AA guns
Aircraft: four floatplanes
Complement: 1,860



The ultimate in World War II cruiser design, USS **Salem, Des Moines** ***and*** **Newport News** ***displaced more than 20,000 tons at full load, and were equipped with fully automatic main 203-mm (8-in) batteries. None saw action during the war, but were in use off the coast of Vietnam.***

Armed Forces of the World

US Naval Aviation

Part 1

10
VA-82 MARAUDERS
NAVY
AMERICA

A Vought A-7E Corsair of VA-82 'Marauders' flies over USS America *(CV 66). The Corsair provides the backbone of the US Navy's light attack component, but is being rapidly replaced by the McDonnell Douglas F/A-18 Hornet.*

Like its sister services in the US Armed Forces, the United States Navy has since the end of the conflict in South East Asia been engaged in major modernization efforts, these manifesting themselves in different ways. Purchase of new equipment (such as the Grumman F-14 Tomcat, McDonnell Douglas F/A-18 Hornet and updated variants of the Lockheed P-3 Orion patrol aircraft) has played a significant part in bringing about enhanced capability, but the US Navy has also subscribed heavily to a concept known as CILOP (Conversion In Lieu Of Procurement), by which substantial numbers of older aircraft are fitted with new internal systems to permit their continued deployment as front-line elements of the combat forces. Notable examples of CILOP updating include modification of Grumman A-6A Intruders to A-6E configuration and updating of McDonnell Douglas F-4B and F-4J Phantoms to F-4N and F-4S standard respectively.

Occupying a position of clear-cut supremacy as the world's major operator of large aircraft-carriers, the US Navy fleet of these vessels currently numbers 14, including four nuclear-powered examples; three further nuclear carriers are on order for delivery by 1991, and it is anticipated that availability of these will eventually permit the two surviving 'Midway' class vessels to be retired after more than 40 years of service. Ultimately, US Navy planning calls for the carrierborne striking force to peak and be maintained at a level of 15 Carrier Air Wings (CVWs), there being 13 such organizations in existence at the present time, with a thirteenth in the process of forming. There appears to be no great degree of urgency attached to forming the additional two CVWs, largely one assumes because of the limited availability of older 'Forrestal' class vessels which are gradually being submitted for major lengthy SLEP (Service Life Extension Program) overhauls.

By virtue of the fact that it literally constitutes a mobile floating air base, the aircraft-carrier remains the single most powerful element within the US Navy, and it is usual for such vessels to deploy with an organization known as a Carrier Air Wing. For the most part, composition of these CVWs follows standard patterns and, with the exception of those assigned to the two surviving 'Midway' class vessels, usually incorporates fighter, attack, airborne early warning, electronic countermeasures and anti-submarine warfare aircraft so as to permit the conduct of operations across virtually the entire spectrum of military aviation. A typical CVW includes nine squadrons operating no less than 86 aircraft. Fighter elements comprise two squadrons each with 12 aircraft, either F-4 Phantoms or F-14 Tomcats, paired sister squadrons invariably using the same type. The light attack component also consist of two squadrons: at present these are universally equipped with the Vought A-7E Corsair, but the first US Navy squadron to convert to the F/A-18 (VFA-113 of the Pacific Fleet) is now well advanced with training in anticipation of operational deployment in 1985, and the remainder of the 1980s should witness widespread introduction of this type. Returning to the CVW, one medium attack squadron uses the Intruder, the number of aircraft embarked usually being 14, made up of nine or 10 A-6E attack models plus four or five KA-6D tanker variants for inflight-refuelling support of all CVW assets requiring this service. ASW elements comprise one S-3A Viking squadron with 10 aircraft and one Sikorsky SH-3 Sea King squadron with six helicopters. ECM assets consist of a single squadron with a quarter of Grumman EA-6B Prowlers. Finally, airborne early warning support is provided by one squadron of four Grumman E-2 Hawkeyes.

Until quite recently, it was also normal for a CVW to include a handful of dedicated reconnaissance aircraft but, following the retirement of the Vought RF-8G Crusader and the Rockwell RA-5C Vigilante, there is now no specialist machine to fulfil this mission, a situation which is unlikely to change in the immediate future. As a temporary solution, most of the Tomcat-capable carriers now deploy with three TARPS (Tactical Air Reconnaisance Pod System) configured aircraft amongst the 24 fighters embarked. Reconnaissance capability has been developed for the F/A-18A Hornet but is not yet on order.

Major fleets

In recent years there has been some imbalance in the quantity and quality of the carriers assigned to each of the two major fleets, the Atlantic Fleet having as many as eight of the so-called 'super carriers' whilst the Pacific Fleet had only four, these latter being supported by the two remaining 'Midway' class vessels, one of them operating on permanent forward-deployed status with its homeport at Yokosuka, Japan. During the summer of 1983, however, the first attempt at redressing this imbalance witnessed the transfer of the 'Midway' class vessel USS *Coral Sea* to the Atlantic Fleet whilst the nuclear-powered USS *Carl Vinson* was reassigned in the opposite direction, both carriers adopting their new assignments upon completion of world cruises.

Although each of the two major fleets is a separate and distinct organization, the past few years have also witnessed greater flexibility in operations and, whilst carrier assignments remained constant until 1983, there have been several instances of Pacific Fleet CVWs operating aboard Atlantic Fleet carriers both off the United States and in the

The Hornet is also intended as a successor to the McDonnell Douglas F-4 Phantom. This nimble and versatile fighter will eventually equip 30 US Navy squadrons.

Mediterranean. Increasing emphasis on naval activity in the Indian Ocean, formerly the sole preserve of the Pacific Fleet, has also seen carriers of both fleets deploying to this area on a regular basis, albeit at the cost of reductions in the number of Carrier Battle Groups in the Mediterranean (6th Fleet) and Western Pacific (7th Fleet) from two to one. By and large, however, carriers tend to go where the action is and the recent troubles in Chad and the Lebanon will almost certainly have resulted in the number of carriers available to the 6th Fleet again increasing to at least two.

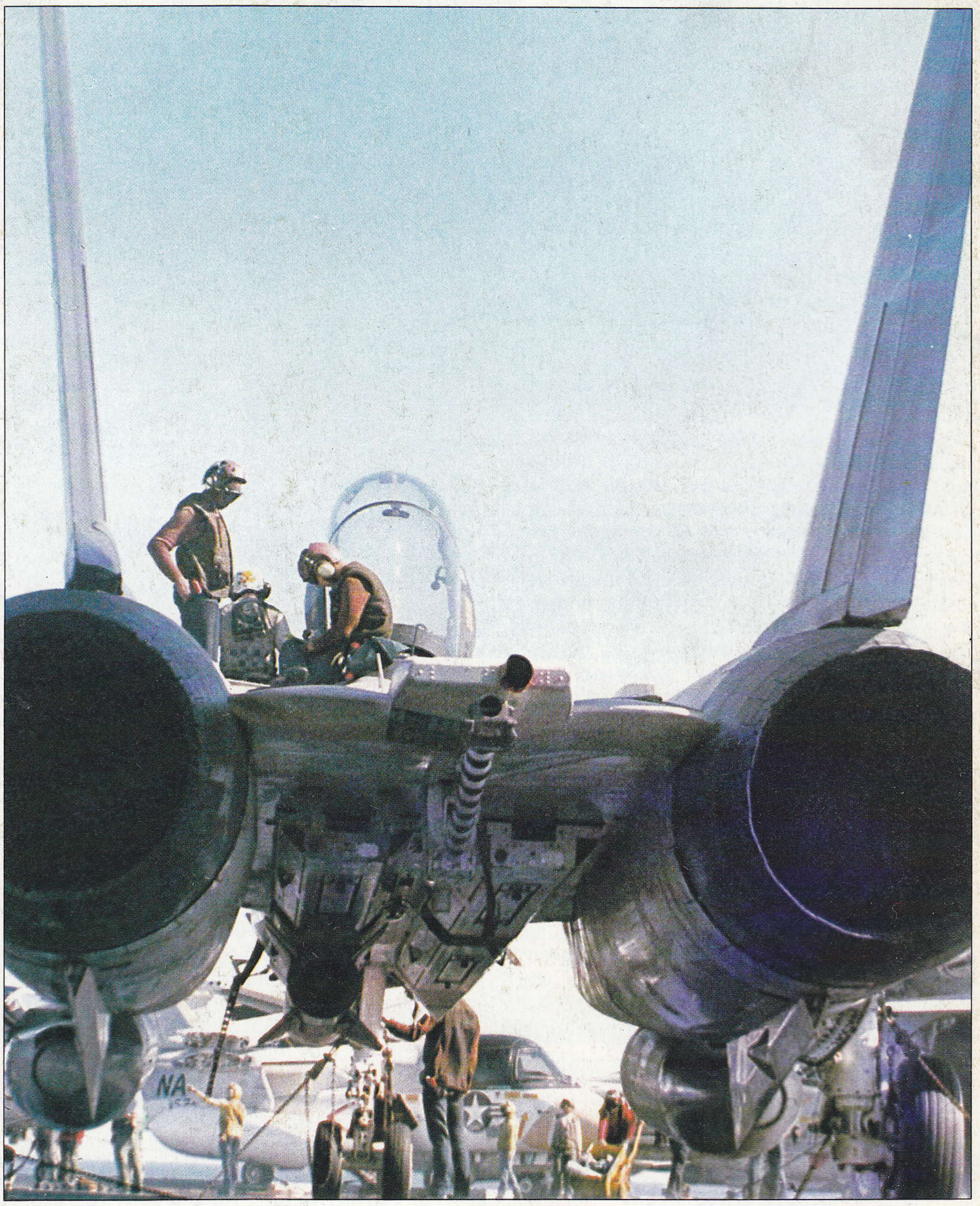
Organization

From the organization point of view the US Navy is a fearsomely complex agency and one that would require almost a book to itself to describe adequately. Essentially aviation elements of the two fleets report either to the Commander Naval Air Force Atlantic Fleet (ComNavAirLant) at Norfolk, Virginia, or to ComNavAirPac at North Island, California, both of these being subordinate to their respective Fleet Commander-in-Chief. To provide a clearer understanding of the way in which aviation assets are further organized, it is worth examining NavAirLant in greater detail, for this is essentially representative of both Atlantic and Pacific organization apart from a few fairly minor details.

To assist ComNavAirLant in control of the various assets which comprise his command, numerous smaller sub-commands exist, most being responsible for fairly specific areas of activity. It is these subordinate commands which shoulder the burden of ensuring smooth running on a day-to-day basis. Heading the list are four Carrier Groups (CarGrus), namely CarGru2 at Naples, Italy; CarGru4 at Norfolk, Virginia; CarGru6 at Mayport, Florida, and CarGru8, also at Norfolk. It is to these that the active aircraft-carriers are attached although it should be noted that CarGru2 has no permanent carriers of its own, normally controlling those detached from the three US-based groups for tours of duty with the 6th Fleet in the Mediterranean. The Carrier Groups also exercise control over the CVWs, each of the latter being headed by a commander who, in turn, reports to the captain of the carrier to which his wing is assigned. Currently, the Atlantic Fleet possesses six active CVWs, a seventh being in the initial stages of forming as part of the US Navy's long-term expansion programme. Pacific Fleet organization follows similar lines, there also being four CarGrus and six active CVWs, a figure which may eventually increase to eight later in the present decade.

Tactical assets (fighter, attack and airborne early warning aircraft) normally report direct to the commander of the CVW to which they are attached for operational control, but since most of these spend far more time ashore than at sea there are also a number of 'functional' commands which look after the more routine non-operational aspects. Since the early 1960s it has been a feature of US Navy policy to form 'communities' at certain shore bases and thus all deployable Atlantic Fleet fighter and medium attack squadrons are nominally located at Oceana, Virginia, when not at sea, whilst light attack squadrons have been gathered together at Cecil Field, Florida. Overall responsibility for the various functional commands is vested in Tactical Wings Atlantic Fleet (TacWingsLant) at Oceana, this overseeing four separate and distinct 'communities' comprising Carrier Airborne Early Warning Wing Twelve (CAEWW-12) at Norfolk (E-2C Hawkeye squadrons); Fighter Wing One (FitWingOne) at Oceana (F-14 Tomcat squadrons); Light Attack Wing One (LatWingOne) at Cecil Field (A-7 Corsair squadrons) and Medium Attack Wing One (MatWingOne) at Oceana (A-6 Intruder squadrons).

As far as the Pacific Fleet is concerned, the 'community' concept is also normal, although there is no intermediate link in the chain of command, the various functional wings reporting directly to ComNavAirPac. For the record, and to illustrate the subtle differences in organization, these are as follows: Fighter and Airborne Early Warning Wing Pacific (FitAEWWingPac) at Miramar with F-4, F-14 and E-2 squadrons; Light Attack Wing Pacific (LatWingPac) at Lemoore with A-7 and F/A-18 squadrons; and Medium Attack/Electronic Warfare Pacific (Mat/VAQWingPac) at Whidbey Island with A-6 and EA-6B squadrons. Although nominally grouped together under the aegis of the Pacific Fleet it should be noted that EA-6B Prowler units deploy operationally with both major fleets while one other notable point concerning the Pacific Fleet centres around the forward-basing of the USS *Midway*, for this has necessitated the provision of a similarly forward-based CVW, namely CVW-5 which has fighter, attack, electronic warfare and airborne early warning squadrons shore-based at Atsugi, Japan, when not embarked. Nevertheless, all seven squadrons of CVW-5 are still nominally grouped within the functional wing commands despite the fact that most have not been shore-based within the USA for some 10 years.



The Grumman F-14A Tomcat is the world's most capable naval air defence fighter. It is unique among carrierborne aircraft in having a variable-geometry wing, which gives unequalled performance and manoeuvrability. The Tomcat and its long-range armament of AIM-54 Phoenix missiles gives the Carrier Battle Group an unprecedented defensive radius against air attack.

Whilst dealing with functional commands it is also worth pointing out that these do also administer the needs of the various non-deployable fleet replacement squadrons that are engaged solely in training duties. Using equipment identical with that of their sea-going counterparts, these are non-operational units tasked with bringing newly-qualified naval aviators ('nuggets') and Naval Flight Officers (NFOs) up to operational standard before assignment to a front-line squadron; with overseeing the transition of squadrons to new equipment; with provision of refresher course for aviators returning to flying after a tour of non-aviation duty and with training of maintenance personnel. Each of the respective communities normally has at least one such squadron to ensure a constant flow of qualified personnel to fleet units.